

THE
**SURGICAL INSTRUMENTS
OF THE HINDUS**

WITH

**A Comparative Study of the Surgical Instruments of
the Greek, Roman, Arab and the Modern
European Surgeons.**

BY

GIRINDRANĀTH MUKHOPĀDHYĀYA, B.A., M.D.

*Fellow of the Calcutta University, McLeod Gold Medalist in Surgery, Formerly
Lecturer on Surgery Calcutta Medical School and College of Physicians
and Surgeons (Bengal), Member of the Asiatic Society of Bengal,
Life Member and Professor of Botany, Indian Association
for the Cultivation of Science, Examiner,
Calcutta University*

Griffith Prize Essay for 1909.

In Two Volumes.

VOL. I.

**Published by the Calcutta University,
1913.**

PRINTED BY APULCHANDRA BHATTACHARYA, AT THE CALCUTTA
UNIVERSITY PRESS, SENAPEE HOUSE, CALCUTTA

TO

THE HON'BLE

SIR ASUTOSH MUKHOPADHYAY, Kt.,

Saraswati, Sastra-vachaspati,

C.S.I., M.A., D.L., D.Sc., F.R.A.S., F.R.S.E., F.A.S.B.,

Judge of the High Court of Judicature at Fort William
in Bengal,

VICE-CHANCELLOR, CALCUTTA UNIVERSITY,

Ex-President of the Asiatic Society of Bengal,

AND

Chairman of the Board of Sanskrit Studies,

In recognition of his love of Science, his pre-eminent services to the cause
of University Education, his administrative ability, and his generous
liberality to scholars

AS WELL AS

In grateful remembrance of many acts of kindness,

THIS VOLUME IS

DEDICATED

BY

THE AUTHOR



PREFACE.

For researches into the state of medicine among the Ancient Hindus, we have several sources of information to scrutinise. The remarks of Dr. Payne regarding the sources of information of Anglo-Saxon Medicine may apply here with still greater force.¹

First is the evidence of contemporary literature about the craft of physicians and surgeons, since we are sure that there has always been a class of medicine men of one kind or another. Thus we find in the Rgveda, the use of artificial limb as a substitute for a limb accidentally lost² From the Mahābhārata,

¹ Payne's English Medicine in the Anglo-Saxon Times, p. 7.

² चरित्रं हि वेरिवाच्छेदि पर्णम्

आज्ञा खेतस्य परितक्षायाम् ।

सद्यी जङ्गाभायौ विशपदायै

धने हिते सर्चंदे प्रत्यधनम् ॥

Rgveda—15th Bk., 1st Mandala, 116 Sūkta.

अगस्त्यं पुरीहितः खेती नाम राजा तस्य सम्बन्धिनी विशपलानामस्तै, सथामे शतुभि, छिद्रपदा आसीत् । पुरीहितेन अगस्त्येन स्तूतौ अश्विनौ रात्रौ आगत्य आधीमयं पादं समधनाम् । तदतदाह 'आज्ञा'—आज्ञौ, सथामि, अगस्त्यं पुरीहितस्य—खेतस्य राजतः सम्बन्धिन्या, विशपलायाया, 'चरित्र'—चरण, 'वेरिव'—दे, पर्क्षिणः, 'पर्ण' परचम् इव, 'अच्छेदि हि'—पूरा छिद्रमभृत् खलु । हे अश्विनौ । युवां अगस्त्येन स्तूतौ सन्तौ, 'परितक्षायाम्'—रात्रौ, आगत्य, 'सद्यी'—ददानीमेव, 'सर्चंदे'—सर्चू मन्त्रम् इत्यर्थः, विशपदायै 'आयसौ',—खौहसयीम्, 'जङ्गा'—जङ्गीपलचित्तं पादम्, 'प्रत्यधनम्'—सम्बानम् एकौकर्म्मभित्यर्थं सततवन्तौ ।

we learn that when Parikṣit, the king of the Kurus, became certain of his approaching death by snake-bite, due to a curse uttered by a sage, he tried to protect himself by the constant attendance of a number of physicians, who were well supplied with antidotes.¹ Again it is stated that when the great warrior Bhīṣma was wounded in war, the skillful army surgeons came to him with the necessary medical and surgical appliances to treat his wounds.² From the *Mohāvāgga*, we learn that Jīvaka, the personal physician of Buddha, practised cranial surgery with success.³ In the *Mālavikāgnimitra*, we find the use of charms—a signet

¹ समन्वय सक्षिभिर्दुष्प स तदा मन्त्रतत्त्ववित् ।
प्राप्ताद् कार्याभास एकस्तथं मुरद्वितं ।
रक्षाच्च विद्धे तत्त्वं भिषजशौषधानि च ।
श्रावणशान्तस्त्रिवृत्तय सर्वती वैद्यदीजयत् ।

Mahābhārata, Adi Parva, Ch. 42.

² उपानिषद्ग्रन्थी वैद्याः श्लोकशृण्वानीविदाः ।
सर्वोपायकररण्युक्ताः कुशलैः साधु शिक्षिता ।
तान् डडा जान्हवीपुषः प्रोवाच तनय तत् ।
धनं दत्ता विस्त्वना पूजयिता चिकित्सका ।
एवं गते अयोद्यानी वैद्यः कार्यमिहासि किं ।
चतुर्थर्म प्रशस्तां हि प्राप्तीऽस्मि परमा गति ।
नैष धर्मो महीपाला शरतत्त्वगतम्य मे ।
एभिरेव शरैश्चाह दग्धव्योऽस्मि नराधिपाः ।
तच्छ्रुता वचनं तस्य मुखी द्युष्मनस्त्र ।
वैद्यान् विसर्ज्याभास पूजयिता वैद्याऽहंतः ।

Mahābhārata, Bhīṣma Parva, Ch. 121,

Vs 5745—5750. (A.S B. Ed.)

ring as a healing talisman for the cure of snake-bite,¹ and also we find there a reference to a class of physicians who specialised themselves in Toxicology (Viṣa-Vaidya),² and were held in high esteem for their professional skill by the public.³ From the Bhojaprabandha, the administration of some kind of anaesthetic by inhalation before surgical operations can be ascertained. Similarly from the books of Law, we know the relations of the profession to society in general. In the Manusāṃhitā, we have unmistakable testimony of the decline of Hindu surgery as the author prohibits the eating of cooked rice from the hands of a surgeon.⁴

¹ सहि ! देवीए इदं सिपिसआसादी आनीदग्गामुहासगाह अहुलीअब्र सिणिङ्गं खिभालअन्ती तृह उवालमे पडिदक्षि ॥

Malavikāgnimitra, Ch. I.

जय ।—जैदु जैदु भडा । भुवसिङ्गी विश्वेदी । उदकुमविधाणेण सप्तसुदिशा कपिदव्वा ।
क्षा असेसीअदुक्ति । घारि ।—एदं सप्तसुदिशम् अहुलीअब्रम् । पच्छा मह हत्ये गाम् ।

Ibid, Ch. IV.

² परि ।—कैदी दंशस्य दाही वा चतस्यारक्तमीक्षणम् । एतानि दष्टमाचाण-
मायुषाः प्रतिपत्तयः ॥ (संप्रति विषवैद्यानाम् कर्त्त्वं ।)

राजा ।—जयसेने ! भुवसिङ्गः चिप्रभाङ्गताम् ॥

Ibid, Ch. IV.

³ निपु ।—पसष्मुहवरणो दीसदि । अवि अ भुवसिङ्गिणा चिङ्गसिदी । मा मे
असङ्गचिक्षं धावं ॥

Ibid, Ch. IV.

⁴ चिकित्सकान्देवलकान्मासविक्रियिणस्या ।

विपर्णेण च जीवन्ती वज्जाः स्युर्व्वक्ष्ययीः ॥

Manusāṃhitā, Ch. III, 152.

चिकित्सकस्य भृगयोः कूरस्यीच्छिष्टभैजिनः ।

उयाद्वं सूविकान्न च पर्याचान्तमनिदेशम् ॥

Ibid, Ch. IV, 212.

Secondly, monuments or inscriptions scattered about the country have to be searched, as references found therein to the science of medicine, are more trustworthy than documents which may have been more or less tampered with by interpolations of subsequent writers. Thus we learn from the Edicts of Asoka, that hospitals were established by him in different parts of his kingdom, not only for the treatment of suffering humanity but also for the brute creation¹.

Thirdly, personages and scenes in connection with medical practice, and figures of herbs may have been represented in works of art which must be thoroughly examined. But unfortunately we do not possess any such work of art and so we can learn nothing to our purpose from this source. In the interpretation of the subject of the Friezes of the Rani Naur and Ganesha's Cave, Dr. R. L. Mitra says,—“The shampooing in the Ganesha Cave may be for a parent, but the close seat with the right hand round the neck of the male personage in the other, would be highly unbecoming in an unmarried female. But if the stooping figure be taken to be that of a wounded man, a wounded priest for instance, the lady may be a maiden nursing him without any offence to propriety. It is true that the appearance of the figure on the mattress does not indicate suffering from a wound, but in the Rani Naur frieze, the stooping head affords some indication of it”².

पूर्वे चिकित्सकस्याद्व पुंश्चल्यास्त्रवसिन्नियम् ।

विषा वार्दूषिकस्याद्व शलविक्षयिष्ठी मत्तम् ॥

Manusamhitā, Ch. IV, 220.

Rock Inscriptions, Edict II.

¹ The Antiquities of Orissa, Vol. II, p. 11

Fourthly, the various kinds of surgical instruments preserved in museums are to be examined and the reports of finds of surgical appliances in various localities are to be studied. We know what a flood of light has been thrown on ancient Greek surgery by the steady progress of archaeological discovery and finds of instruments at Pompeii, Herculaneum and elsewhere, and by the study of the specimens preserved in the Naples museum, the Athens museum and other museums of Europe. But as far as I have been able to trace, our museums contain no finds supplying us with any information on the subject.

Fifthly, the literature of medicine itself should be thoroughly inquired into and excerpts elucidative of our subject should be compared with one another. "The detailed descriptions of the very numerous Hindu instruments not being very minute or precise, Professor Wilson says, we can only conjecture what they may have been, from a consideration of the purport of their names, and the objects to which they were applied, in connection with the imperfect description given." We are fortunate, however, in possessing a copious medical literature of great merit from very early times. We shall describe the important books in the introductory chapter, with short notices of their authors.

Sixthly, the comparative study of the science at the same period in other countries also furnishes us with valuable materials, as regards the state of medicine in a country. It is well known that Sanskrit works are often written in a very terse language

and it might be said with greater truth about the works of early Sanskrit authors, the comment of a learned critic about the style of Thucydides, the famous historian,—“the most obvious and characteristic of his peculiarities is an endeavour to express as much matter as possible in as few words as possible, to combine many thoughts into one, and always to leave the reader to supply something of his own. Hence his conciseness often becomes obscure.” I could not form any idea as to the shape of some of the surgical instruments from the descriptions given in the text books, and the commentators are often silent on those passages. But when I read the accounts of similar instruments in Greek and Roman literature, my difficulties at once cleared up. We know with what brilliant results comparative mythology and comparative philology have been studied of late years, and I am sure that a comparative study of medical science by scholars will lead to interesting discoveries. So I have added descriptions of the instruments according to the Greeks, Romans and Arabs at the end of the descriptions given in Sanskrit books. the former serving as commentaries on the latter.

Seventhly, in the accounts of historians, travellers and pilgrims from foreign countries, may be found notices of medical science, as they saw it practised during their sojourn in a country, and such impressions, if properly collated, may bear impartial testimony to the progress of the science at the time. Again, we must enquire if the original treatises of medicine can be proved to have been translated into different languages and whether the remedial agents of a country can be traced in the ~~Ph~~ ^{poetas} of different nations. Thus we

learn from the accounts of Houen Tsang and Fa Hian that charitable institutions such as hospitals, dispensaries and Pūnyasālās (Houses of Charity) were quite common in ancient India¹ Arrian informs us in his *Indica* that the study of medicine among the Brahmans was in great favour.² We know that the standard works on medicine were translated in Arabic in the 8th Century B. C.,³ and that various medicinal herbs of Indian origin found their way into the Greek *Materia Medica*⁴

Eightly, we must enquire whether the medical practice of ancient times is still resorted to by the physicians of the present days. The Hindu system of medicine is still being practised all over India, more or less in its original form, and so can still be studied at first hand. But for our present purpose, we derive little or no help from the *Vaidas* of the present generation. They know practically nothing about anatomy and surgery which began to decline during the Buddhist era, and finally all vestiges of the science became lost during the Mahomedan rule. I have spared no pains to exhaust these sources of information so far as surgical instruments are concerned. Whether or not I have been fortunate enough to give just the necessary details of instruments from the best accessible authorities without at the same time loading my pages with superfluous matter, must be left to the judgment of my readers to determine.

¹ Beal's Buddhist Records of the Western World, Vol I., P 165, 198 and 214; Vol. II., p 188 and 303.

² Arrian's *Indica* c. 27.

³ Alberus's *India, Sacra et Profana* p LXXX XXXI

⁴ Royle's Antiquity of Hindu Medicine p 77 113

Now it may be asked why the Science and Art of Surgery, which was successfully practised in Ancient India, is so much neglected by the present generation of *Vaidas*. So let us consider the causes that led to the downfall of Hindu Surgery.

1. The Hindus from a very early period have given up the dissection of human bodies—the only trustworthy method of acquiring anatomical knowledge—merely because it may occasion ceremonial uncleanliness. The Ancient Hindus were, however, free from such prejudices. Manu lays down that mere bathing will purify a Brahman who has touched a corpse,¹ whilst stroking a cow or looking at the Sun, having only sprinkled his mouth with water will remove the defilement due to touching a dead bone². But even in the *Manusamhitā*, we can trace the decline of Hindu surgery, and his law forbidding any one from eating food from the hands of a doctor evidently refers to a surgeon.

2. The interference of the priests in India, as in Europe played an important part. They began to cure diseases by spells, charms, texts and drugs, and temples have served as consulting rooms for the treatment as much of the diseases

¹ दिवाकोर्चिन्द्रियका च पवित्र दूषिका तथा ।

श्व तत्पृथिव्ये चैव सूर्या कानेन शृण्वति ॥

The Institutes of Manu, Ch V, 85.

² नारं स्फूर्शिणि सर्वेह सात्त्वा विद्रो विश्रवस्ति ।

आचम्येव तु निष्ठेह नामालभ्याकर्मीक्षयता ॥

Ibid., Ch V, 87.

of the body as of the soul. The example of such a temple we still find in Tārakeśvar where many sick people repair to have their maladies cured by dreams, hypnotic suggestions and incubation or temple-sleep. Similar practice was prevalent in Egypt and Greece in olden times. The modern practice of using galvanic rings and abdominal belts is merely an advanced method of indulging in superstitious ideas.

3 The patients always dreaded the surgeon's knife—especially when the use of a general anæsthetic was unknown. At the same time, the comparative success of poultices, actual and potential cauteries, and other external applications have influenced the lay mind that operations by knife are not always needed.¹ The Hindu surgeons themselves believed in similar tenets, for Suśruta, the surgeon, remarks that "of all cutting instruments and their substitutes, caustics (or vegetable alkalies) are the most important, because by means of them, deep and superficial incisions and scarifications may be made, and derangements of the three humours (air, bile and phlegm) may be rectified", and again he says that "with

१ दिव्योषधि विना देवि शस्त्रविद्या सुनिष्कला ।
 वैष्णवं कुरुते या च दुष्कितिस्ये व्यधान्तरे ॥
 जायन्ते हि यथार्थसि पाटितानि पुनः पुनः ।
 किं तत्र शस्त्रसात्य स्यात् सुसिद्धैभेषजैविना ॥
 सातुना व्यापदि यत्र भेषजं नैव सिद्ध्यति ।
 श्वाभये दुसरे तस्मिन् शस्त्रसेव विधीयते ॥
 पुनः संशमनं तत्र धातुनाम् हि प्रशान्तये ।
 प्रदावन्यं मद्दर्दिभि शस्त्रादर्च्छाक भ्रवीमि ते ॥

regard to surgical treatment, actual cautery is said to be superior to caustics, in as much as diseases treated with the actual cautery do not reappear, and because it can cure diseases which are incurable by medicines, instruments and caustics”¹ Thus we see that the Hindus were partial to external applications as a cure of surgical diseases, and gradually they neglected the surgical operations—one of the most important means of acquiring knowledge in Merid Anatomy and of testing the correctness of diagnosis, in the absence of the post mortem examinations of the cadavers. Thus not only surgery but medicine also suffered materially.

4 The Hindus always cherish a high regard for the writings of their sages, and the earliest works on medicine became the standard works and were held sacred. Any violation of their opinions was considered a sacrilege, and all knowledge thus soon became stereotyped. In later times, none dared to question the validity of the statements contained therein, and though about three thousand years have elapsed, and though the votaries of the science are still honoured and wellpaid, the science instead of improving has markedly deteriorated. In fact, only two authors—Caraka and Suśruta—are original; the later authorities—and there is a vast number of them—were merely their servile copyists who only differed from them when they indulged in some grave errors. We have a parallel in the history of medical science in Europe, where Galen

¹ शारदशिर्गीयान् क्रियासु व्याख्यातसद्विद्यान् रीगानामपुनर्भाव्याद्विषज्ञश्वस्त्रार्द-
साध्यानां सत्त्वसाध्यलाज्जः।

held his sway over the profession for about two thousand years.

5. One of the potent causes of progressive decadence in the knowledge and practice of surgery amongst the Hindus is the rapid spread of Buddhism in India. Though Buddha sanctioned the use of the lancet in some cases, in cases of a doubtful nature he prohibited the use of instruments in the treatment of even surgical diseases. For example, he allowed the surgical treatment of boils by knife,¹ but he prohibited not only the use of the lancet for treatment of fistula-in-ano but the use of clysters also.² As it would be interesting to know the reasons of this prohibition, I quote the story in full from the *Mohāvāgga* (Sacred Books of the East)³

1. Now when the Blessed One had remained at Sāvatthi as long as he thought fit, he went forth on his journey to Rāgagaha, and wandering straight on he arrived at Rāgagaha; and there at Rāgagaha he stayed at the Veluvana in the Kalandaka-nivāpa

Now at that time a certain Bhikkhu was suffering from fistula. And the physician (named) Ākāsa-gotta lanced it. And the Blessed One when he was going round through the sleeping-places came to the place where that Bhikkhu dwelt.

2. Ākāsa-gotta, the physician, saw the Blessed One coming from afar, and when he saw him he said to the Blessed One : ' Let the venerable Gotama come and look at this Bhikkhu's orifice ;

¹ *Mohāvāgga*, VI 14, 4 & 5.

² *Ibid.* VI 22 3.

³ *Ibid.* VI 22

it is like the mouth of an iguana!' And the Blessed One thinking, 'This foolish fellow is making fun of me,' kept silence and turned away. And in that connection, and on account of that, he called a meeting of the Bhikkhu-samgha, and asked the Bhikkhus: 'Is there, O Bhikkhus, in that Vihâra a Bhikkhu who is sick?'

'There is Lord.'

'What is the matter, O Bhikkhus, with that Bhikkhu?'

'That venerable one, Lord, has a fistula, and Âkâsa-gotta the physician, has been lancing it.'

3. The Blessed Buddha rebuked (that Bhikkhu), saying, 'This is improper, O Bhikkhus, for that foolish one, unbecoming, indecent, unworthy of Samanas, not allowable and ought not to be done. How can this foolish fellow, O Bhikkhus, allow a surgical operation to be performed in that part of his body? The skin there, O Bhikkhus, is tender, the wound is difficult to treat, the knife is difficult to guide. This will not redound, O Bhikkhus, to the conversion of the unconverted.'

And having rebuked him, the Blessed One, after delivering a religious discourse, said to the Bhikkhus: 'You are not, O Bhikkhus, to allow a surgical operation to be performed upon you in that part of your bodies. Whosoever allows that, is guilty of thullakkaya offence.'

4. Now at that time Khabbaggiya Bhikkhus since a surgical operation had been forbidden by the Blessed One

‘Is it true, as they say, O Bhikkhus, that the Khabbaggiya Bhikkhus use a clyster?’

‘It is true, my Lord.’

He rebuked them, and having delivered a religious discourse, said to the Bhikkhus: ‘No surgical operation is to be performed within a distance of two inches round the anus, and a clyster is not to be used. Whoever does so, is guilty of a thullakkaya offence.’

And thus we find that Jivaka, the famous surgeon, is said to have cured a case of fistula-in-ano by the single application of an ointment¹ The operation fell into such disuse that when Śankarāchāryya suffered from the same disease, no surgical aid was thought necessary by the physicians, though it is said that he was treated by renowned doctors of the time.²

From Megasthenes, we learn that “among the Sarmans the Hylobioi (living in woods) were held in most honour, and next to them the physicians, who are mendicants and also ascetics, like the class above them and the class below them,

¹ “And Gīvaka Komārabhālka healed the fistula of the Magadha King Seniya Bimbisāra by one anointing.”

Mohāvāgga (Sacred Books of the East), VIII. 1 15.

² अचिकित्स्यभगद्वाक्यरोगप्रसरच्छिणितपङ्कितस्त्रशार्थां ।

अजुगप्यविश्वाधनादिरूपां परिचर्यामक्ताऽस्य तीटकार्थः ॥

* * * * * * *

निगदिते भुनिनेति भिषग्वरा विदधिरै वह्यागदस्त् क्रियाः ।

न च अशाम गटीवासापटीविमनम् पटवी भिषजीभवन् ॥

which consisted of sorcerers and fortune-tellers,"¹ and Strabo² mentions that these physicians "cured diseases by diet rather than by medicinal remedies which were chiefly unguents and cataplasms"³

6. No science can flourish without the support of the government of the day. The Hindus became a subject race; and any departure from the traditional store of knowledge in the shape of improvement in the quality and additions to its quantity was neither tolerated by the people, who are proverbially conservative, nor countenanced by the royal court, for the conquerors brought with them and patronised their own hakeems and doctors. Neither the Mahomedans nor the English have taken any real interest in the Indian Medical Science from preconceived notions that it contains nothing worthy of their perusal. The *Kavirajes* again are so conservative in their opinions that they can not boldly advocate even the use of such drugs as are of unquestionable value in the treatment of diseases, as for example the use of Quinine in Malaria. To this may be contrasted the behaviour of Bhāvamīśa, who lived about three hundred years back and who adopted many medicaments of foreign origin. The consequence can easily be imagined, and in the language of Elphinstone, can be thus described: "Physicians follow the practice of their instructor without inquiry, and surgery is so far neglected, that bleeding is left to the barber, bone-setting to the herdsman, and every one is ready to administer

¹ The Invasion of Alexander the Great. M'Cordle Appendices. p. 358.

² y XV 1 58-60

³ The Great. M'Cordle. Appendices. p 368-69

a blister, which is done with the juice of the euphorbium and still oftner with the actual cautery."¹

But we need not enlarge any further. The object of this essay is not to write out an exhaustive dissertation on the Hindu medical science but by a few suggestive facts, however imperfect and fragmentary, to stimulate curiosity and divert attention of the diligent scholars to a vast field of research, which seems as yet to have been only partially explored.

It is proper here to acknowledge that I have on all occasions freely availed myself of the labours of Drs Wise, Thakore Saheb of Gondal, and the translators of *Suśruta Samhitā* in the *Bibliotheca Indica*, namely, Dutt and Hoernle. It is a great pity that this translation has not as yet progressed beyond three fasciculi. Hoernle's recent contribution, "Osteology of the Hindus," is a move in the right direction and we hope it to be followed by similar enquiries in other branches of the science. Royle for the first time proved beyond doubt the high antiquity of Hindu medicine, and established its right position in the history of the science. Wise is the pioneer of systematic research in this field of study, and his sympathetic appreciation of the Hindu system of medicine will always be remembered with gratitude by our countrymen. Dutt's *Materia Medica of the Hindus* is a work of great merit, and I have derived material assistance from the excellent treatise, "History of Aryan Medical Science," by the Thakore Saheb of Gondal. Dr. Ray's History of Hindu Chemistry is a valuable contribution in the cognate subject of chemistry. I have borrowed from these writers largely, but

I flatter myself it will also be found that I have further collected from various sources a store of valuable information, for which I am in no way indebted to any of my predecessors in the same field of research. The descriptions of the surgical instruments of the Greeks, the Romans and the Arabs, I have taken from the excellent English translations of Paulus *Ægineta*, the Extant Works of *Ætius* and the Genuine Works of Hippocrates, prepared by the renowned Adams, for the Sydenham Society. I have also laid the recent monograph, "Surgical instruments in Greek and Roman times" by Dr Milne, largely under contribution; I only regret that I had no access to the book a little earlier, otherwise much of my labour in search for descriptions of the instruments of the Greeks would have been saved. For the last five years, I have been engaged on this investigation and it was when I had nearly finished, that Milne's book was mentioned to me by the Hon'ble Mr. Justice Asutosh Mookerjee, the Vice-Chancellor of the Calcutta University and the President of the Asiatic Society of Bengal.

To complete the subject, I have added plates of nearly all the varieties of instruments; but they are more or less hypothetical as we do not possess any actual specimens of the instruments of the Hindus. Written descriptions of surgical instruments are uninteresting and often fail to convey the true idea, which could be easily made evident by the pencil. For purposes of comparison I have given drawings of instruments of the Greeks, the Romans and the Arabs, when I thought that they might be of value for the proper elucidation of my subject. I am indebted to many authors

I am indebted to many authors for some of the engravings of the instruments. I have been careful to give the source whence the borrowed ones are taken, as far as I have been able to ascertain them. If this has been omitted in any case, it is from inadvertence, not from design. My best thanks are due to them and I here acknowledge my indebtedness to the authors for availing myself of their labours without their permission. But many new illustrations will be found, and I have appended my name to those drawn by myself. These figures of the surgical instruments would be found to tally better with the descriptions of the instruments given in the Sanskrit books than the illustrations of the previous authors. The drawings of surgical instruments as given by me would look more like the figures in a modern catalogue of surgical instruments. Some of my friends could hardly believe when they saw the plates that these instruments were known to the ancient Hindus at such an early age. This feeling of amazement and incredulity as regards the surgical instruments used by the ancient Hindus has its parallel in the observations of Billroth¹ about the surgical instruments found in the excavations at Pompei and now preserved in the museum at Naples. He says. "It made a peculiar impression upon me, when I saw before me this two thousand years old surgical armamentarium of a Roman colleague, differing but slightly in the form of the more ordinary instruments from those of our time. *Ais longa utu brevis*" Milne² also remarks "The works of those (Paré, Scultetus and Heister) are profusely illustrated with instruments, some of which can plainly be seen to tally exactly with the descriptions of the classical authors."

¹ Billroth's Surgery, Vol. I, Introduction, Page 7 Syd Soc. Ed

² *Romæa Surgical J* 18, P 8

In describing the surgical instruments, I have confined myself strictly to the texts of the authors and commentators whom I have quoted, and have given the original Sanskrit passages in the foot-notes. These will be of great help to scholars who will try to study the subject at first hand, and prosecute further historical inquiries. The references in the foot-notes do not refer to pages of any particular edition of the work, as such pagination causes inconvenience to the readers who may not secure the edition in question; so we have given the section, and chapter of the book which will be found in any edition.

In the translations of Sanskrit passages, I have endeavoured to follow the original as closely as possible, except where a somewhat free rendering was necessary to make the meaning clear.

The dates of the ancient Hindu authors of Sanskrit medical books cannot be ascertained with certainty. In the first chapter I have endeavoured to discuss briefly their approximate ages. But as I have compared the surgical instruments of the ancient Hindus with those of the Greeks, Romans and Arabs, a concise summary of the chronological dates of the Greco-Roman, Arab, and the later authors would be a great help in the proper elucidation of my text.

<i>Authors.</i>	<i>Date.</i>
Pythagoras	... 580-504 B.C
Megasthenes	.. 300 B.C.
Ktesias	.. 400 B.C
Hippocrates	460 B.C
Hero of Alexandria	280-222 B.C

<i>Authors.</i>	<i>Date.</i>
Dioscorides	First century A.D.
Celsus	25-30 B.C. to 45-50 A.D.
Scribonius Largus ..	45 A.D.
Soranus	First century A.D.
Rufus of Ephesus ..	98-117 A.D.
Galen	131-201 A.D.
Marcellus Empiricus	300 A.D.
Antyllus	3rd century, A.D.
Oribasius	326-403 A.D.
Theodore Priscianus	4th century A.D.
Caelius Aurelianus.	4th or 5th century A.D.
Moschion	5th century A.D.
Actius	5th century A.D.
Alexendar of Tralles	525-605 A.D.
Paulus Aegineta	660 A.D.
Serapion	800 A.D.
Rhazes	850-932 A.D.
Haly Abbas	After 950 A.D.
Avicenna	980-1037 A.D.
Abul Cassim	1106 A.D.
Avenzoar	1162 A.D.
Paré	1509-90 A.D.
Scultetus	1650 A.D.
Heister	1739 A.D.

I can not suffer this work to go forth without offering at least an explanation of, if not an apology for, the delay which has occurred in the publication of this thesis. It is truly due to the accidental fire which reduced the types and the blocks

for this work to ashes and destroyed a part of the manuscript. This portion had to be written again. Again the task of reading proof sheets was laid on me entirely. The occupation of a laborious profession encroached on my time; and I was not fortunate enough to secure the co-operation of any worker in this field of research. The result might be anticipated and no one is more conscious of the unsatisfactory issue than myself. I had no experience in proof reading, and so mistakes are not uncommon. Some of the errors will be found corrected in the corrigenda. As regards the corrections of many of the proof sheets of the Sanskrit foot-notes I was assisted by my son Hirendranāth Mukhopādhāya, who helped me much in getting this book completed. The author will feel obliged if informed of any errors that may be detected and of references to informations which ought to have been given, and also for any hints that may make a future edition more useful to the readers. But I have this consolation in my mind that I have not pushed this work through the press hurriedly or pefunctorily and I have done my best. I have laboured with the usual drawbacks of an active professional life and if this be admitted by the critic as an excuse for errors and failures, I shall be grateful to him.

A copious index has been provided for this work, whereby anything material in the whole book may be readily found out, of which it may be said that it wants no other advantages than such as the author had not power to give.

It would not be out of place here to mention that part of this essay was read before the Asiatic Society of Bengal in June, July and August 1908. The learned President in his annual address worked as follows. In the course of the last

session Dr. Girindranath Mukerjee submitted to the society a paper of considerable extent, in which he elaborately examined the subject of the surgical instruments of the ancient Hindus. The questions he has raised, as to the priority of Hindu medicine over that of the Greeks, the Romans and the Arabs, are likely to arouse controversy, but in whatever way the question of priority may be decided, it seems to me truly remarkable that the descriptions given in our most ancient books on medicine, of the surgical Instruments then in use, should bear a close resemblance to the descriptions given not only in Greek, Roman and Arab medical writings but in many cases with the descriptions given in modern works on surgery. I trust that this subject, so peculiarly Indian, will not be left alone and will receive the attention from investigators which it undoubtedly deserves":

As regards the transliteration of Sanskrit words, we have employed the method adopted in the Congress of Orientalists and circulated in the Journal of the Royal Asiatic Society, ignoring in fact, the unpleasant characters of the Sacred Book of the East.

¹ Journal and Proceedings of the Asiatic Society of Bengal, Vol V, 1909, Annual Address, p XXX.

I

SANSKRIT AND ALLIED ALPHABETS.

अ a	ओ o	ट t	ब b
आ ā	औ au	ठ th	भ bh
इ i	क k	ड d	म m
ई ī	ख kh	ढ dh	य y
उ u	ग g	ण n	र r
ऊ ū	ঁ gh	ত t	ল l
ঁ ?	ঁ n	ঁ th	ব v
ঁ ?	ঁ c	ঁ d	শ ś
ঁ l	ঁ ch	ঁ dh	ষ s
ঁ l	ঁ j	ঁ n	স s
ঁ e	ঁ jh	ঁ p	হ h
ঁ ai	ঁ ñ	ঁ ph	ঁ l

* (*Anusvāra*) . . . m s (*Avagraha*) . . . *

* (*Anunāsika*) . . . m̂ *Udātta*

: (*Visarga*) h *Stavita*

× (*Jihvāmūliya*) . . h *Anudātta*

× (*Upadīpaniyi*) h

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and commentaries. Vāgbhata I.—Astāṅga Samgraha, his age, edition and commentary, Vāgbhata II—Astāṅga Hṛdaya Samhitā, editions and commentaries, Vāgbhata III—Rasa Raṭna Samuccaya, Mādhabavakara:—Nidāna; Vṛinda Madhava—Siddhayoga; Cakrapāṇidatta.—Cikitsāśāra Samgraha, editions, Śārangadhara—Śārangadhara Samgraha, editions and commentaries, Bhāva Miśra.—Bhava Piākāśa, editions.

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1 The Svastika yantia or cruciform Instruments
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Vyāghramukha or Tiger forceps. Viśāmukha
or Wolf forceps Tarakṣumukha or Hyena
forceps Eķamukha or Bear forceps
Dwipumukha or Panther forceps Mārjāra-
mukha or Cat forceps Śigālamukha or Jackal
forceps. Airbbāmukha or Deer forceps. Kākamukha
or Crow forceps Kañkamukha or
Heron forceps. Kuraramukha or Osprey forceps
Cāsamukha or Blue-Jay forceps. Bhā-
samukha or Eagle forceps Saśaghātimukha
or Hawk forceps. Ulukamukha or owl forceps
Cillimukha or Kite forceps. Syenamukha or
Vulture forceps Crdhranukha or Falcon forceps

Klañcāmukha or Curlew forceps Bhrngaraja-
 mukha or Butcher-bird forceps. Añjalikainā
 forceps. Avabhañjanamukha forceps Nandi-
 mukha forceps II The Sandaiñśa or Pincher-
 like forceps. Forceps with and without
 handles. Forceps with Smooth and rough ends
 Epilation forceps Mucutī or Mucundi
 Vāñśabidala or Bamboo forceps. III Tāla-
 Yantra or Picklock-like instrument Ectāla
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 Yantra or Tubular instruments Kāñthaśalyā-
 valokini or Throat speculum Pañcamuka and
 Trimukha. Tubular instruments for inspec-
 tion of arrows. Śalyaniighātāni The Impel-
 lent. Tubular instruments for Piles—for inspec-
 tion and medication. Samī. The Rectal Specu-
 lum Caloptei Tubular instruments for the
 Fistula-in-ano Tubular instruments for the
 nose Nasal Speculum Nathu-karani and
 Yamaka-nathu-karani Nasal tubes. The
 Añguli-trānaka or Finger-guard. Yoni-
 Vranekṣaṇa or Vaginal Speculum Dioptei.
 Bivalve Speculum. The tubular instruments for
 wounds—Vrana-vasti or Wound-Syringe
 Tubular instrument for ascites Dākodara yantra
 or Canula Tubular instruments for Hydrocele.
 Tubular instruments for rectal stricture.
 Tubular instruments for injection into the
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 Uttaravasti or urethral, vaginal and uterine
 tubes. Catheters. Tubular instruments for
 inhalation and fumigation Disinfection
 of rooms, clothes &c. Tubular instru-
 ments for cupping Srunga or horn. Alābu
 Yantra or gourd Ghat Yantra V Salaka

or rods Earthworm probes Arrow probe Snake's hood probe Fish-hook probes. The Śāṅkus; Swab probe Spathomele or spatula probe Spoon-shaped probes. Cyathiscomele Nail-shaped probes Jāmvavauṭṭha probe. Gamma-shaped probe and the aūkuṣā cautery. Collyrium probes Karṇa Śodhana or Ear-cleaner. Garbha-Śanku or Fetus or Traction hook Yujña-Śanku or Midwifery forceps Sarpa-faṇa or snake's hood-like rods Stone extractor. Hippocratic oath Sarapuṇḍha-mukha Probe Arddhacandramukha or Half-moon Probe. Bone Lever. Director Urethral Probe VI. The Upayantra or Accessory Instruments Rajju or thread, Venikā or twine; Patta or Bandages, Abdominal binder, Field Hospital, Dressings Garma or leather, leather bandage, leather ligatures. Yantra-Śataka or Lithotomy Strap or binding apparatus, Pāśa Leather bags Śirovasti or leather-bag for the head Leather Band. Leather Bottles, Jars, etc Antarvalkala or Banks The crutches, Tendrils of creepers or Lata Vastra or cloth Asthikāśma or stone. Mudgala or Hammer. Pāṇipadatala or hand and foot Auguli or fingers Jihvā or tongue. Danta or tooth Nakha or nails Mukha or mouth Vāla or hair Probang. Suturing material Aśvakataka or the ring of a horse's bridle. Śākhā or branch of a tree Sthivana or spittle Pravāhana or fluxing the patient. Hāra or Happiness Ayaskānta or Load-stone. Kāra or Caustics or Potential cautery Agni or Aetral cautery Bheṭaja or medicines Goats g t Arrest of hemorrhage

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,	87	2 & 4		„	
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,	99	„ 8		Pālakāpya	Pālakapya
,	109	8		Salya	Salya.
,	117	„ 5		bamboo	bambu.
,	119	„ 9		Baṇḍu	Baṇu &
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„ 318	„ 2	„	„	Patāmoha	„	Patāmoha
„ 352	„ 22	„	„	Furoz	„	Furioz.
„ 354	„ 11	„	„	Areca	„	Arecha
„ 355	„ 12	„	„	Dvārusita	„	Davrusiti

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1. Muscles of the Human Body, arranged in Tabular forms.
Fourth Edition. Re. 1
2. Tropical Abscess of the Liver
Thesis approved for the degree of Doctorate in Medicine,
Madras University Rs. 5
3. Glossary of Indigenous Medicinal Plants.
(In the Press)
4. Notices, Biographical and Bibliographical, of the Indian
Physicians and their Works on Medicine.
(In the Press)
5. Medicine in the Vedic times.
(In preparation)

THE STAR MEDICAL HALL,
80, Russa Road North, Bhawanipur,
CALCUTTA.

THE
Surgical Instruments of the Hindus.

CHAPTER I
INTRODUCTION.

ANCIENT MEDICAL AUTHORS AND THEIR WORKS.

The Science and Art of Medicine, like many other different branches of learning originated with the Hindus. They consider the art of healing as an Upaveda and it is generally known as Āyurveda, that is the art of prolonging life. Like the Vedas, they trace the origin of the science to God, the fountain of all true knowledge. Bramhā transmitted this heaven-born science to this world for benefit of the mortals in one of the sacred writings, the Āyurveda.

It was composed as a sub-division of the Atharva Veda and consisted originally of a *lakh slokas* or a hundred thousand stanzas, divided into a thousand chapters. Then considering the short span of life and inadequate intelligence of man, he divided the book into eight parts¹ as follows —

¹ तद्यथा ॥ श्रव्यं शास्त्राक्ष्यं कायचिकित्सा भृतविद्या कौमारस्त्वमग्रदत्तनम् रसायनशब्दं वाजीकरणतन्त्रमिति ॥

Suśruta Saṃhitā, I. 1.

कायचिकित्सा शास्त्राक्ष्यं शन्यहर्तृकं विषगरवैरीधिकप्रशमनं भृतविद्या कौमारस्त्वकं रसायनानि वाजीकरणमिति ।

Caraka Saṃhitā, I. xxx

वेदी श्वायर्व्वेष्ण खन्द्यनवलिमङ्गलहीमनियमप्रायश्चित्तोपवासमद्वादिपरिष्ठान् चिकित्सा प्राप्त

Ibd.

1. *Śalya Tantra* or Major Surgery
2. *Śalākya Tantra* or Surgery of parts above the Clavicles.
3. *Kāya Cikitsā* or Inner Medicine.
4. *Bhūtvidyā* or Demnology
5. *Kaumāraabhiṣṭya* or the Science of Pediatrics.
6. *Agada* or Toxicology.
7. *Rasāyana* or Treatment to prolong life.
8. *Vājikarana* or Treatment to stimulate the sexual power.

The book is no more available now, Suśruta being the authority for the above information¹

A different view is held by others, who trace the origin of Hindu Medicine in the verses of the Rgveda²

¹ इह खल्लायुर्वेदी नाम यदुपाङ्गमर्थर्थवेदस्प्रान्तादैवत प्रजाः श्रीकशतसहस्र-मर्याधसहस्रच लतवान् स्यम् । ततीत्यायुहमर्थमेवस्तुचावलोक्य नराणा मूर्योऽप्त्वा प्रष्टीतवान् ॥

Suśruta Saṁhitā, I. 1.

तत्र चेत् प्रष्टार स्याः चतुर्णामकसामयगुरुरथर्थवेदानां क वेदमुपदिशन्त्यायुर्वेदविदः । किमायुः क्षमादायुर्वेदः किञ्चायमायुर्वेदः शाश्वतोऽशाश्वत इति । कानि चास्राजानि कथं यस्मद्वितव्यः किमर्थवेति ॥

तत्र भिषजा एष्टेनैव चतुर्णामकसामयजुरथर्थवेदानाम् आत्मनीऽथर्ववेदे भक्तिरादेश्या ।

Caraka Saṁhitā, I. xxx

The origin of medical science, as quoted in the above passage of Caraka, does not however agree with the view expressed by the author in the Sūtra Sthāna, Ch. I (See footnote I. P 4) In Ch. XXX, we find that an attempt had been made to make a compromise between the two views of Agnivesa and Suśruta. Evidently this was the work of a later redactor, possibly Drdhavala

न च्छायुर्वेदस्प्रान्तीतिरूपत्वाभ्यते । अन्यत्राववीधीयदेशाद्भेदत्रै इयमपि क्षत्य चत्पत्ति-मुपदिशन्त्येके स्माभाविकव्याप्त्य लक्षणमधिकात्य यदुक्तम् इह चायेचाभ्याये * * * ॥

Caraka Saṁhitā, I. xxx

² चृष्टेदश्यायुर्वेद उपनिदः

Vyāha by Vy

ATHARVA VEDA.

"On examining the contents of the Atharva Veda more in detail, we find that the hostile charms it contains are directed largely against various diseases or the demons which are supposed to cause them. There are spells to cure fever (takmān), leprosy, jaundice, dropsy, scrofula, cough, ophthalmia, baldness, lack of vital power, fractures and wounds; the bite of snakes or injurious insects, and poison in general; mania and other ailments. These charms are accompanied by the employment of appropriate herbs. Hence the Atharva Veda is the oldest literary monument of Indian Medicine"¹ This Veda can not belong to a period later than 1000 B.C., but possibly earlier². It exists in the recensions of two different schools. That of the Paippalāda is only known in manuscript, discovered by Prof. Buhler in Kashmir and described by Prof. Roth in his tract *Der Atharva Veda in Kaschmir* (1875). The printed text, edited by Roth and Whitney in Berlin 1856, gives the recension of the Śaunaka School.³ It has been translated into English Prose by Whitney, 2 Vols., into English verse by Griffith, 2 Vols., Benares, 1897, and with the omission of the unimportant

¹ McDonnel's Sanskrit Literature, P. 196

अथवैदस्य * * * * चतुर्थ वैदलेपि प्रायेणाभिचारव्यर्थत्वाद्यज्ञविद्यायामनुप-
योगासानिर्देशः । तथाहि चृग्वेदेनैव हृष्वं कुर्वन् यजुर्वेदेनाध्यथेव सामवैद्नोऽहावै-
यदेव चैव विद्याय सूक्तन्तेन ब्रज्ञत्वमितिशुते स्त्रीयसम्यादत्वं यज्ञानां ज्ञायते ।

Kallūka Bhaṭṭa's Commentary on *Manu Smṛitī*, Ch. III, Sloka I.

² On the date of Atharva Veda, see pp. CXL—CLXII, Prof. Lanman's Edition of Whitney's Transl., Prof. McDonnel's Sanskrit Literature, pp. 185—201

³ I ex Ver. cum in the Journal of the Am. Or Soc. Vol. XII

hymns, by Bloomfield¹ into English Prose, with notes, in Vol XLIII of the Sacred Books of the East.

CARAKA SAMHITA

In the Caraka Samhitā we find that Brahmā taught Dakṣa the science of medicine, Dakṣa became the preceptor of the Aśvin twins, they in their turn became the teachers of India and Indra imparted this knowledge to Bharadvāja who was sent by a conclave of sages to learn the art for the welfare of the human race². Bharadvāja had Punarvasu Ātreya and the others as disciples. Ātreya's students were Agniveśa, Bhela Jatakarṇa, Pañcātra, Hārīta and Kṣārapāṇi, all of whom became celebrated as the authors of treatises on Medicine; the Caraka Samhitā being a revised and improved edition, of the treatise of Agniveśa, which was declared to be the best production. Caraka did not, however, redact the whole

¹ He has also edited the Kauśika Sātra of the Atharva Veda, with extracts from the commentaries of Dārīta and Kesiava (see Vol. XIV Journ. Am. Orient. Soc.). It is very useful as a help to the proper understanding of the meaning of a hymn.

² दीर्घजीवितसमिक्ष्यच्छन् भरद्वाज उपागमत् ।
इन्द्रमुखतपः बुद्धा शरण्यमसरेवरम् ॥
ब्रह्मणा हि यथा प्रीक्तमायुच्चद प्रजापतिः ।
जशाह निखिलेनादाविविनो तु पुनरुतः ॥
अधिवेद्या भगवान् श्रव. प्रतिपेदे ह वीवलम् ।
चृष्णिकी भरद्वाजसम्माच्छक्तुपागमत् ॥

Caraka Samhitā, I. i.

³ अथ मैत्रीपर पुण्यमायुच्चद पुनर्ज्वसुः ।
शिष्येभ्यो दत्तवान् षड्यः सर्वभूतानुकम्पया ॥
अग्निवेद्य भैलव अनुकर्णः परापर ।
क्षारीतः व्यापाणिश अग्नहुतमुन्नेवेच ॥
बुद्धोर्वेष्वस्त्रामीद्विपदेशान्तरं सुनेत्रः ।
तन्त्रस्य कर्त्त्वं प्रथमभिवेशी शतोऽभवत् ॥
अथ भैम्याद्यवृक्तु च त्वं तत्त्वं क्षतानि च ।
आवश्यमानुग्रन्थे सर्विसङ्ग मुमेधम् ॥

book;—the last forty-four chapters¹ were edited by Drdhabala,² a native of Panchanadapura, long supposed to refer to Punjab (the land of five rivers) but at present identified with a town in Kashmir by Dr. Hoernle.³ Two other works, the treatises of Bhela and Hārita, are still extant, the former existing in manuscript in the Tanjore Library⁴ and the latter as printed texts by *Kavirāja* K. C. Sen and B. L. Sen, of Calcutta.⁵

Now as regards the age of Caraka, there is great divergence of opinions. The Indians generally believe him to be a Rsi of great antiquity while the European scholars try

¹ For a discussion on the part added by Drdhabala, see Hoernle's Studies in Ancient Indian Medicine, J. R. A. S. 1908, P. 997-1002. Also see pp. 11-15 in the *Vanausadhi Darpana*, Vol. I., by *Kavirāja* Birajā Charan Gupta, 1908.

अतस्त्वीकरणिद चरकेणातिवृद्धिना ।
सस्कृतं तत् तु सस्तरं विभागेनीपलत्यते ॥
इदमन्यूनप्रदार्थं तत्त्वं दीषविवर्जितं ।
अखण्डार्थं दृढवली जातः पञ्चनदे पूरे ॥
क्षत्वा वहन्यस्त्वं भी विशेषाच्च वलीच्चयम् ।
सप्तदशोषधाव्यायसिद्धिकल्पैपूरयत् ॥

Caraka Samhitā, VIII, xii.

अमिन् सप्तदशाव्याया, कत्वपाः सिद्धय एव च ।
नासाद्यन्तेऽप्रिवेशम्य तत्त्वे चरकसंख्यते ॥
तानेतान् कापिलवलः शेषान् दृढवलोऽकरीत् ।
तत्त्वस्थान्यं भवार्थस्य पूरणार्थं यथातयम् ॥

Ibid, VI, xix

² Hoernle's Studies in the Medicine of Ancient India, Part I, Osteology, Introduction, p. 2. See also his article on "The authorship of Caraka Samhitā" in the *Archiv für die Geschichte der Medizin*, 1907.

³ See Burnell's Tanjore Catalogue No. 10773 of Sanskrit MSS., P. 63.

⁴ It is doubtful whether the Hārita Samhitā is the genuine work of the Rsi Hārita. The printed text refers to Caraka Suśruta and even Vāgbhaṭa, who were less likely posterior to Hārita. See the Foot-note 3 P. 8.

to connect him with historical events of more modern times. Sylvain Lévi has recently discovered in the Chinese Translation of the Buddhist *Tripiṭaka* that Caraka was the Court Physician of the Indo-Scythian King Kanis̄ka, in the first century A.D.¹ But the following objections are to be met with before his conclusions can be accepted as proved —

1. The age of Kanis̄ka is not yet settled, the probable limits of his reign being from the first century B.C. to the second century A.D.² Moreover in the Buddhist *Tripiṭaka* referred to, the name of Caraka is simply mentioned as the Court Physician of the King Kanis̄ka but there is nothing to identify him with the author of the book. The same name, found in different places, does by no means signify the same person.

2. The time assigned to Caraka by the Indian medical tradition is of great antiquity. With regard to the chronological position of the three old authors, he is mentioned as anterior to Suśruta and Vāgbhaṭa I.³

3. Dr. Rāy has pointed out that the name Caraka is patronymic in the Veda.⁴ It is quite possible that a much

¹ See Journal Asiatique—July to December 1896, p 444 to 484 and January to June 1897, p 5 to 42, also Indian Antiquary Vol XXXII, 1903, p 382 and Vienna Oriental Journal, Vol XI, p 164

² See V. A. Smith's Early History of India, P. 225-26

Dr. Fleet in J. R. A. S., 1906, P. 979

Dr. Bhandarkar in J. R. A. S. (Bombay Branch), Vol. XX, P. 269

J. A. S. B. Vol XXXIX, 1870, p 65 and 126

³ चरकः सुशुत्त्वैव वाग्भट्त्वं तथापरः ।
सुख्यात्वं स हिता वाच्यात्वित्वं एव शुर्गं युरे ॥
अतिः कृतयुरे दैवी द्वापरे सुशुती मतः ।
कलौ वाग्भटनामा च गरिमात्रं प्रदृश्यते ।

Hārita Samhitā, Parāśāṭādhāya.

⁴ Dr. P. C. Rāy's History of Hindu Chemistry Introduction P. X.

Later namesake of his, is referred to by the *Tripiṭaka*, just as we know that more than one Vāgbhaṭa appeared as successful physician. Again we have evidence that eminent physicians in later times were called Caraka by way of a compliment and so Vāgbhaṭa was called Caraka of Sindh or Sindhicara.

4. Pāṇini wrote special Sūtras for the Agniveśas and the Carakas.¹ These names must have been famous before Pāṇini's time, otherwise he would not have written special Sūtras for them. Prof. Goldstucker has conclusively proved that Pāṇini could not have flourished later than the sixth century B. C.²

5. Patañjali wrote a commentary on Caraka.³ He flourished during the second century B. C. Both Cakrapāṇi-datta and Bhoja allude to him as the redactor of Caraka Saṅhitā.⁴ So Caraka must have flourished long before him, for unless his work was regarded as a standard work of authority, Patañjali would not have taken so much pains to write notes on the book, and still more for issuing a redaction.

6. The internal evidence of the book itself speaks against such an assumption. There is no salutation to any deity at the

¹ कटचरकाल्पूक् । Pāṇini 1. 3 107.

गर्गादिभ्य यत् ॥ Ibid, 4 1 103

गर्गः वत्सः । * * * * अग्निवेश * * * * पराशरः जसुकर्णः । * * * .

² Goldstucker's Pāṇini; and Journal of the Asiatic Society of Bengal, Vol. XLII, P. 254.

³ आहीनाम अतुभवेन वस्तुतत्त्वस्य कात्सेन निश्चयवान्, रागादिवशास्त्रपि नान्यथावादी यः स इति चरके पतञ्जलि ।

Quoted in Laghumāñjusā of Nāgeśa Bhaṭṭa (Rāy).

⁴ पातञ्जल—महाभाष्य—चरकप्रतिमस्तुतैः ।

मनीवाक-कायदीवाणाम् इर्वेऽहिपतये नम ॥

The salutation in the *Ayurvedaśārthadīpikā*.

beginning of the book,—a custom invariably found to be observed in the more modern compilations. There is complete absence of Pañcarātic theology in the Caraka Saṃhitā, nor is there any reference to Śākyā Muni and his religion. Kanis̄ka was a great patron of Buddhism, and it might naturally be expected from the Court Physician of the king to describe the charitable hospitals which we know from the edict of Aśoka, to have flourished in every quarter of India. On the contrary we find descriptions of a hospital as reserved for rich men only at their own houses. Those gods and goddesses that figure so prominently in the Purāṇas were unknown during his time.¹ Beef was not then, apparently, a

¹ No doubt the names of Lekṣmī, Kṛṣṇa and Vāsudeva occur in Cikitsita Sthānam, Chapter XXV, but it should be remembered that they occur in the Supplement added by Drdhavala in later times.

सर्वयहा न तत्र प्रभवन्ति न चाग्निश्वन्तृपचौरा ।
 तुच्छौश तत्र भजने यत्र महाग्न्यस्त्वल्पस्ति ॥
 पितृसाण इमत्ताद सिद्धं सन्त्वमूदीरयेत् ।
 सम साता जया नाम विजयो नाम से पिता ॥
 सीड्हं जयो जयापुत्रो विजयीय जयानि च ।
 नमः पुरुषसिंहाय विश्वे विश्वकर्मणे ॥
 सनातनाय क्रश्याय भवाय विभवाय च ।
 तेजो वृषाकपे सान्नान् तेजो ब्रह्मेन्द्र्यीयमे ॥
 यथाह नाभिजानामि वासुदेवपराजयम् ।

Caraka Saṃhitā, VI, xxv.

But Kṛṣṇa and Vāsudeva are mentioned in Pāṇini as demigods, having many adherents who formed a class. “वासुदेवार्जनाद्य बुन” Pāṇini, 4, 3, 98. Again the passage may be an interpolation of a subsequent Vaiṣṇava Vaid.

So Brāhmaṇdhvaja is also mentioned in Drdhavala's Supplement, as a god to be worshipped during the preparation of some medicines.

ब्राह्मधीषशङ्खपटहमिरीनिदैः सिद्धं सितच्छतकतच्छार्यं गजस्त्वमारीपयेहगवन्त
 वृषभवज्ञमिष्यत एह दिभागमाचिकमङ्गलाज्ञीः सुति इवता च्छनैर्वैसिं गमयेत् ॥

forbidden food, for it is spoken of as an article of diet that should not be indulged daily,¹ nor should it be used in excessive quantity as it is mentioned as a cause of the disease, Vāta-Rakta.²

The style of the book is antiquated and decidedly savours that of the Brāhmaṇas. Nāya and Vaiśeṣīka systems occur in the text,³ and so probably the book was written long before the compilation of these Sūtras.

Editions—The book had undergone several editions. It was edited by Jibānanda Vidyāsāgar, Calcutta, in 1877 and 1896 (2nd Ed.), by Gaṅgādhar Kaviratna, Berhampur, 1879, by Gupta, Calcutta, 1897, with commentary by Cakrapāṇidatta, Calcutta, 1892-93, by Jaśodānandana Sarkar, with Bengali translation, 1894.

Translations—It had been translated into English by A. C. Kaviratna, Calcutta, 1897. Caraka was translated from Sanskrit

And we find that the antidote to poison called भद्रागच्छसी is said to have been told by Tryambaka (Śiva) to Bāsiṭavanna (Kuvera).

अगदीदय वैश्वराणाम्यातन्त्रस्वकेण षट्प्रङ्गः ।

Caraka Samhitā, VI xlv.

Also we find the name of Kārttikyea mentioned in Sec. IV ch. viii.

प्रसूत लभविक्षिष्टमविक्षिष्टा शभावने,

कार्त्तिकैयथुति पुच्च कार्त्तिकैयाभिरचितमिति ॥

¹ कुचिंकाश किलाटांश शौकर गथ्यभानिष ।

मत्कान् दधि च सापाश यावकाश न शौकदैत् ॥

Ibid, I v.

² कुलत्यभाषनिष्पावश्चाकाद्विपलतिषुभिः ।

दध्यारनालभौवीरयुक्तक्षुरामवैः ॥

Ibid, VI

* Vide Caraka, III

into Arabic in the beginning of the eighth century and his name "Sharaka Indianus" occurs in the Latin translations of Avicenna, Rhazes and Serapion. "A translation of the Karaka¹ from Sanskrit into Persian and from Persian into Arabic is mentioned in the Fihrist, (Finished 987 A.D.). It is likewise mentioned by Albérūnī², the translation is said to have been made for the Barmekides. Albérūnī's chief source on Medicine was "Caraka, in the Arabic Edition of Ali Ibn Zain, from Trabaristan."³

Commentaries.—

1. Patañjali—2nd century B.C.—not available
2. Cakrapāṇidatta's Caraka Tattparya Tīkā, or Āyurveda-dīpikā⁴—1060 A.D.
3. Haricandra⁵—1111 A.D.—not available.
4. Śibadāsa's Caraka-Tattva-Pradīpikā
5. Gaṅgādhara's Jalpa-Kalpa-Taru—1879 A.D.

¹ Proceedings of the As. Soc., Bengal, 1870, September

² Renaud, *Mémoire sur l'Inde*, P. 316

³ Maxmuller's Science of Language, Vol. I., P. 168, Foot Note.

⁴ Sachau's preface to India, P. XL.

⁵ See Caraka Saṁhitā with Cakrapāṇidatta's Commentary by Kairājya Harināth Viśārada, Calcutta, 1895.

⁶ A Commentary written by Haricandra is referred to in the Sanskrit Slokas narrating the genealogy of Maheśvara, the author of Viśvaprakāśa and Saḥasrākāra, who flourished during the reign of Saḥasrāka, king of Gāzipur in 1033 Saka (1111 A.D. Wilson).

श्रीकाशाङ्कृपतेरणवद्विद्-

वैद्यीकरङ्ग पदपञ्चिमेव विभृत् ।

यशन्द्रचारुचरितो हरिचन्द्रनामा

सद्ग्राम्या भरकत्तमभर्त्तचकार ॥

SUŚRUTA SAMĀHITĀ.

The next treatise on Hindu Medicine is the Suśruta Samāhitā. Suśruta was the son of the sage Viśvāmitra,¹ a contemporary of Rāma. He learned the Science of Medicine from Divodāsa, surnamed Dhanvantari, king of Benares, at his Himalayan retreat. According to Suśruta, Divodāsa was the incarnation of Dhanvantari, the celebrated physician of the gods in heaven, and he first propounded the Art of Healing in this world.² Suśruta represented the Surgical School while Caraka was pre-eminently a Physician in practice.

As regards the authorship of the book, opinions differ. To Suśruta, Dhanvantari addressed his lectures on Major Surgery,³

¹ Mahābhārata, Anuśāṣana Parva, Ch 139, Vs. 8-11.

धन्वन्तरिर्वर्चमभृतां वरिष्ठो वाचिवशारदः ।

विष्वामित्राभ्यन्तर्विशिष्य सुशुत्तमखण्डात् ॥

Suśruta Samāhitā, V. ii.

अट्टाग्रयवेदिविद दिवीदासं महामतिः ।

किञ्चन्नाम्नार्थसन्देहं सूच्यनामादभिवीदविधिः ।

विष्वामित्रसुतः श्रीमान् सुशुत परिपूर्वक्तिः ।

Ibid, VI. lxvi.

सर्वशास्त्रार्थतत्त्वज्ञ स्त्रीदृष्टि कृदारणीः ।

वैश्वामित्र शशास्त्रार्थ शिष्य वाशिष्यतिर्मनिः ॥

Ibid, VI. xxviii.

² अथ खलु भगवन्नमभरवरस्त्रिप्रिण्यपरिष्ठेत्तात्रमस्ये काश्चिराज दिवीदासं धन्वन्तरि-
मोपर्धनवैतरणीरभिषोक्तालावतकर्तीर्थगीपुररचित्तमुत्प्रभृतय उच्चः ।

Ibid, I. 1.

³ अत्र कद्मै किमुच्चातामिति । त ऊच्चः । अस्माक सर्वेषामेव शत्रुज्ञानमुखे
क्षत्तोपदिश्तु भगवानिति । स उच्चाचैवमस्तुति । ... अन्नाकर्मकमतीना अतमभिसमीक्ष्य
सुशुती भगवत्तं प्रत्यति ।

Ibid L

which he reproduced in this work. But in the opening lines of the book, salutation is offered to Brahma, Daksa, Asvins Indra, Dhanvantari, Suśruta and others¹. This shows that Suśruta can not be the author of the work or at least of the work in its present shape, for no author can offer salutation to himself. By "the others" are no doubt meant the notable surgeons who practised and taught the Science of Surgery and who were either contemporary with or posterior to Suśruta. Possibly the original Suśruta Saṃhitā had been recast and the redactor could appropriately offer a salutation to the original author and to other surgeons who flourished before him. There is also an Indian medical tradition, noted in Dallanacārya's Commentary, which assigns the improved and supplemented edition of Suśruta's original work to Nāgārjūna,² the celebrated Buddhist Chemist, who is said to have been a contemporary of the king Sātvahana.³

In the third chapter, Suśruta enumerates the subjects described by him,—the chapter forming an index of the book. Therein he mentions the five principal divisions of his book and says that the Uttara Tantra or the Supplement would be

¹ अमी ब्रह्मप्रजापत्यश्ववलभिहृत्वर्त्तसुश्रुतप्रहृतिभ्यः ।

Suśrata Saṃhitā, I

² यव यत्परीक्षे नियोगस्तव तक्षेव प्रतिसंस्कृत्सूक्तं ज्ञातव्यमिति । प्रतिसंस्कृतपीडनापार्थ्यून एव ।

Dallana's Commentary to Saśruta, I 1.

See also Dr. Cordier's *Recentes Découvertes*, pp. 12-13.

³ See Hārṣacārita by Vāgā.

Beal's *Buddhist Records of the Western World*, Vol II, P. 209, 212, 216.
Burgess' Archaeological Survey of S. India.

Introd. a hist. of a Budh. In P. 318.

described afterwards.¹ Now the fact that the sixth part was appended to the work as a Supplement or *Uttara Tantra* (*i.e.*, after treatise) clearly shows that it was written afterwards by another surgeon and added to the original treatise. If the original *Suśruta* wished to have six divisions of his book, he would have mentioned it clearly in the index and would not have, after stating that his book consisted of five parts, added that "the Supplement would be described afterwards,"² which seems to be an interpolation of the Supplementor to pass his edition as the original work of the author. Again at the end of the fifth section, there is a passage describing the importance of the *Āyurveda*, which was meant as the conclusion of the book by the author.³ It is to be noted

¹ प्रामाभिहित सविश्वस्यायश्वत पञ्चसु स्थानेषु । तत्र सूतस्थानस्यादाः षट्क्लारिश्वत् । षीडश निदानानि । दश शारीराणि । चलारिश्विकित्सितानि । अर्द्धा कल्पा । वदुचर षट्षष्ठिः ।

अस्यायानां शतं विश्वसेतदुदीरितम् ।

अतः परं स्वनान्नैव तत्त्वमुच्चरमुच्चरे ॥

Suśruta Samhita, I. iii.

² वीजं चिकित्सितमैतत् समाप्तेन प्रकौर्चितम् ।

सविश्वस्यायश्वतमस्य व्याख्या भविष्यति ॥

तत्र सविश्वस्यायश्वत पञ्चसु स्थानेषु । तत्र सूतस्थाननिदानशारीरचिकित्सितकल्पे-
स्यर्थवशात् सविभज्योत्तरे तत्रं शेषानर्थान् व्याख्यायास्त्राम ।

Ibid, I. 1.

³ सविश्वस्यायश्वतमेतदुक्तं विभागमः ।

इहीहिस्ताननिहिंदानसर्वान् वक्ष्यायश्वोत्तरे ॥

सनातनत्वादिदानामचरत्वात्यैव च ॥

तथाहुङ्करत्वात् इत्वादपि देहिना ।

वाक्षस्मृहार्थविक्षापात् पूजितवाच देहिभिः ॥

चिकित्सितात्पुण्यतमं न किञ्चिदपि सुशुत ।

त्वयेत्न्द्रग्रभावमग्राहतयोनिभिर्षग्मुरी ॥

घारधिता तु विमलं सतम् परमस्यत ।

चक्राहार समाचारर्षेषु प्रेत्य च सोदते ॥

that at the end of no other sections do we find a similar passage. He also writes "Thus one hundred and twenty chapters are described" but adds "The other diseases shall be described in the *Uttara Tantra*": the latter part no doubt is an interpolation of the Supplementor. Moreover, in the opening lines which serve as a preface to the sixth part, the authority quoted for the diseases of the eye is Nimi, the king Janaka of *Mithilā* and not *Dhanvantari*.¹ But in the first chapter of the first section, it is described that the sages wanted *Dhanvantari* to teach them *Salyatantra* or Major Surgery only and he consented to their request. And this subject he treated in detail in the five sections of the book. In the Supplement, on the other hand, are described the other branches of the science such as Minor Surgery, Inner Medicine, &c. Probably this part was added afterwards to give completeness to the treatise, and the original *Suśruta* was called *Vṛddhya* or the Old by the commentators to distinguish him from the Supplementor.

Suśruta's work is specially important to us as having two whole chapters (vii and viii of Section I) devoted to the descriptions of Surgical Instruments and one whole chapter (xxv of Section I) to the principles of Surgical Operations.

The age of *Suśruta* is also involved in obscurity. Nothing can be ascertained from the fact that he was a son of *Viśvāmitra*,

¹ अव्याधानं शते विशेषं यदुक्तमसत्त्वायाः।

वद्यामि वहुधा सम्बुद्धिर्दर्शनिसानितिः ॥

इदानीन्तत् प्रवद्यामि तम्भुद्धरमुद्धमः ॥

निष्ठिलेनीपदिश्यन्ते यत्र रोगा पृथिव्याः ॥

शालाक्यशास्त्राभिहिता विदेहाधिपक्वीर्त्तिः ॥

Suśruta Samhita, VI. 1.

² *Viśvāmitra* is the *gotra* name so the complete name may either refer to the great *Viśvāmitra* or to his descendants.

for the age in which the latter lived is not known to us. But he must have flourished during the Vedic Age as many Vedic Hymns are ascribed to him. In the *Mahābhārata*, Suśruta is mentioned as one of the sons of Viśvāmitra¹ and in the *Suśruta Saṃhitā* the author is often described as his son. The age of the great epic has, with good reasons, been fixed at 1000 B.C. So Suśruta must have flourished much earlier. The latest limit which we can assign to Suśruta is 600 B.C. as "there are indications in the *Satapatha Brāhmaṇa*, a secondary Vedic work, that the author of it was acquainted with the doctrines of Suśruta" as regards the Osteology. "The exact date of that work is not known, but it is with good reason referred to the sixth century B.C." Again in the *Atharva Veda*, in the tenth book, there is a hymn on the creation of man in which the skeleton is described according to Ātrey and Suśruta.² "The large portion of it (Books I to XVIII) indeed admittedly belongs to a much earlier period, possibly as early as about 1000 B.C., and the hymn in question is included in this older portion". This shows that Suśruta could not have flourished later than 1000 B.C.

Again in *Hasti-Āyurveda*, a book on the Treatment of

¹ श्वामाद्यनोऽथ गार्यश्च जावलिसुश्रुतसंद्या—

* * * * *

विश्वामित्राभ्यजाः सर्वे मुनयी ब्रह्मादिनः ॥

Mahābhārata, Anuśāsana Parva, Ch. IV.

² See J.R.A.S., 1906, P. 915, 1907, P. 1

³ Hoernle's Studies in the Medicine of Ancient India, Part I. Osteology, Introduction P. 9

Elephants by Pālakāpya, we find the Surgical instruments described after the manner of Suśruta. Pālakāpya lived as a Veterinary Surgeon in the Court of Romapāda, King of Aṅga, which had as its capital the famous town of Cāmpā, identified with the modern town of Bhāgalpur. King Romapāda was contemporary with king Daśaratha, the father of Rāma, the hero of Rāmāyana¹. Here we have a corroborative evidence of the age of Suśruta.

Suśruta is mentioned in the *Vārtikas* of Kātyāyana² who flourished during the fourth century B.C.

We have alluded to Nāgārjūna,³ the Buddhist Chemist, as the redactor of the Suśruta Saṃhitā. He is said to have been a contemporary of king Kaniṣka that is about the first century B.C.

Another revision was undertaken by Candrāṭe, the son of Tisāṭa, the author of Cikitsā-kalikā. He revised the text which must have fallen then into a state of corruption. The probable date of Candrāṭe is the ninth century A.D.⁴

¹ अथ सुश्रुषाख्यस्त्र पितरं च यशस्विनम् ।
एतच्छिखेवकाले तु रीमपाद प्रवापदान् ।

Rāmāyana, Vālakandam, Ch. IX.

See also Rāmāyana, i, 11, 13-20, Mahābhārat, iii, 110, 10008-9, Bhāgavat, ix, 23, 7-10

² सुश्रुतेन प्रीत्वा सौश्रुतं ।

³ Possibly more than one Nāgārjūna appeared in ancient India as a chemist. Albérini says "He lived nearly a hundred years before our time" (India, I. P. 189) Rājtarāṅgini places him in the 3rd century B.C. (I. Vs. 172-173) The modern scholars are of opinion that the founder of the Mahāyāna system lived in the first century A.D.

There is no doubt of the tradition that Suśruta's work was redacted, for the author could not write such a passage as follows:—"The surgical treatises of Aupadhenava, Aurabhra, Suśruta and Pouṣkalāvata from the basis of other treatises on the subject."¹

*Commentators.*²—

1. Cakrapāṇidatta—Vānumati—1060 A.D.
2. Gayadāsa—{Nyāya Candrikā }—{or Pañjikā }—11th century A.D.
3. Jejjatācāryya
4. Bhāskara.
5. Mādhava.
6. Bramhadēva.
7. Dallāṇācāryya—Nibandha Saṃgraha—12th century A.D.
8. Ubhalta (Kashmir).

Editions—Suśruta Saṃhitā has been edited by Madhusūdan Gupta, Calcutta, 1835, by J. Vidyāsāgar, 3rd Edition, Calcutta, 1889, by A. C. Kaviratna, Calcutta, 1888-95, by Prabhūrām Jibanañām, Bombay, 1901; and by Virasvāmī, Madras.

This book has been translated into English in part only by U. C. Datta 1883, A. Chatṭopādhyay 1891, Hoernle 1897, Calcutta, in the *Bibliotheca Indica*. It has been translated into Latin by Hessler and into German by Vullurs.

The book was translated into Arabic before the end of the eighth century A.D. It is called "Kitab-Shawshoon-al-Hindi"

1

श्रीपद्मनवमीरम् सौभृते पौक्षावतम् ।

श्रीपाण्डितव्यताण्डा भूत्याग्येतानि निर्दिश्यत् ॥

Suśruta Saṃhitā, I. iv.

2 * * * * श्रीसहनपालदेवदृपकिवल्लभः श्रीडृष्ट्यः समभूत् । तेन
श्रीजैज्ञानं टौकाकारं श्रीगदासभाज्ञारौ च पद्मिकाकारौ श्रीमाधवत्रद्वा-
दिवादैन्

प्रियते

and also mentioned as "Kitab-i-Susrud" or Book Suśruta by Ibn Abillsaibial. Rhazes often quotes Sarad as an authority in Surgery.¹

VĀGBHATA I.

The next author of celebrity and whose work is still extant is Vāgbhaṭa I or Vāgbhaṭa the elder, the author of *Aṣṭāṅga Saṃgraha* (i.e., Compilation of the Octopartrite Science). In later times, a namesake of his, wrote another work called *Aṣṭāṅga Hṛdaya Saṃhitā* (or the best Compendium i.e., the Heart of the Octopartrite Science). In the *Uttara Sthāna*, Vāgbhaṭa the younger distinctly states that his Compendium is based on the Compilation of Vāgbhaṭa the elder.²

As regards the age of Vāgbhaṭa the elder, there is the same uncertainty as with his predecessors. We are however sure that he is posterior to Caraka and Suśruta for he refers to these writers by name.³

The chronological relation of the three early authors is described in a popular couplet that Ātreya, Suśruta and Vāgbhaṭa were the three great medical authors for the three Yugas—

¹ "His next description is from an author named Sarad, whom he frequently quotes in other parts of his works".

Adam's Commentary on Paulus Aeginetta, VI lxi.

² अष्टाङ्गवैद्यकमहोदधिमस्यनेन योऽष्टाङ्गसंग्रहमहामृतराश्रितः ।

तथाद्यन्तप्रत्यमत्यसमुद्यमाशा प्रौत्यर्थमेतदुद्दितं पृथगेव तत्त्वम् ॥

Aṣṭāṅga Hṛdaya Saṃhitā, *Uttara Sthāna*, Ch. XL, v. 82

³ By name, e.g. in *Samgraha*, *Bombay ed.*, Vol. I, P. 246; Vol. II, P. 421. Again quoted from *Caraka*, *Ibid.*, Vol. I, pp. 20, 93; Vol. II, pp. 212, 213, *et passim*—from *Suśruta* I, *ibid.*, Vol. I pp. 109 121 177 247 Vol. II p. 303, et

the Tretā, Dvāpara and Kali, respectively.¹ They are known as the Vṛddha Trayī or the Old Triad. This medical tradition goes much against the conclusion of Dr. Hoernle that Vāgbhaṭa I must have flourished early in the seventh century A.D. One of the reasons put forward by him is the fact, that "the Buddhist pilgrim I'Tsing, who resided ten years in the Nālandā University (in Bihar) from about 675-686 A.D., states in *Records of Buddhist practices* that the eight arts (i.e., the branches of medicine) formerly existed in eight books but lately a man epitomised them and made them on one bundle (or book)."² Professor Jolly understands by it the Suśruta Saṁhitā while Dr. Hoernle points out with more reasons that it refers to Vāgbhaṭa I's work, the Aṣṭāṅga Saṁgraha (i.e., the Compilation of the Octopartrite Science) and rules out Suśruta by the word "lately."³ But the description that I'Tsing gives of the contents of the book does not warrant any reference to either. Moreover, he has not given any reason why Vāgbhaṭa II's book Aṣṭāṅga Hṛdaya Saṁhitā (the best Compendium of the Octopartrite Science) might not be alluded to by I'Tsing. Dr. Hoernle, however, rules him out by date for "he can not be placed earlier than the eighth century"—an assertion unsupported by any evidence whatsoever. All that he has proved is that "Accordingly it is probable that all these three medical writers (Mādhaba, Dṛḍhabala and Vāgbhaṭa II) come in the period from the 7th to the

¹ See foot-note 3, P. 6.

² I'Tsing: *Records of the Buddhist Religion*. Transl. by Professor Takakusu, P. 128.

³ J. R. A. S., 1907, P. 413.

9th century A.D.¹ at no very great interval from one another," and this proof is based on the age of Vāgbhata I as suggested by I'Tsing's remarks. Thus he has taken for granted what he is required to prove. He has shown that Suśruta is anterior to Vāgbhata I, and Vāgbhata II is posterior to him. But in trying to prove that Vāgbhata I lived in the seventh century he cannot assume that Vāgbhata II lived in the eighth. Another evidence adduced in support of his conclusion is the fact that the non-medical version of the list of bones of the human body as contained in the Law-book of Yājñavalkya presupposes earlier uncorrupted forms of lists of bones both in Caraka and Suśruta, and "the corrupt recension, traditionally handed down, must have come into existence at a later date," that is to say, between the date of Yājñavalkya (350 A.D.) and Vāgbhata I, the latter of whom is proved to have copied from the corrupt recensions of Caraka and Suśruta. Thus the older recensions still existed in the fourth century A.D. and if we add to it the interval of time necessary for the texts to have fallen into a state of corruption, we get the early seventh century A.D. for Vāgbhata I. But we must remember that there is nothing to prevent against the supposition that Vāgbhata I lived before Yājñavalkya. There might have been two recensions of the texts available during Yājñavalkya's time, one corrupted and it might or might not have been the work of Vāgbhata I and another true version which was availed of by the sage Yājñavalkya. And similar events have happened, as has been pointed out by Dr. Hoernle himself, in our own generation Gangādhar's recension of Caraka is a corrupted form of the text,

while the recension given in Jibānanda's edition is the traditional text of Caraka. No critic would I think jump into the conclusion that Gaṅgādhar lived three or four centuries after Jibānanda. Again if it be true, as he contends, that Suśruta was redacted by Vāgbhaṭa I, we could easily imagine that Yājñavalkya copied his list bones from the original Suśruta and not from the redaction of Vāgbhaṭa I. So we see that the age assigned to Vāgbhaṭa I, or the seventh century A.D. can not be accepted as proved. Dr. Hoernle says. "It should, however, be understood that these conclusions regarding the date and authorship of Vāgbhaṭa I, are not put forward as established fact."

Let us recapitulate the objections that can be urged against the conclusion that Vāgbhaṭa I lived in the seventh century A.D.

1. Vāgbhaṭa I is believed by the Indian medical men to have flourished long before the Christian era. By some, he is connected with the court of Yudhiṣṭhīra, but his name is nowhere mentioned in the Mahābhārata. Ātreya, Suśruta and Vāgbhaṭa are described as the Old Triad or Vrddhya Trayī and they were the authorities for the Tretā, Dvāpara and Kali Yugas, respectively. It is curious to observe that Dr. Hoernle in arguing against the conclusion of Prof. Jolly that Suśruta is meant by I'Tsing, takes advantage of this Indian medical tradition that Suśruta flourished during pre-historic times, but does not mention the same tradition with regard to Vāgbhaṭa I, which goes against his own conclusion. On the other hand the same objection does not apply against Vāgbhaṭa II.

2. The name of Vāgbhaṭa I's book Compendium of the

Octopartrite Science, no doubt, agrees very well with the description of I'Tsing that "lately a man collected them into one bundle." But Vāgbhaṭa II's book "The best Compendium of the Octopartrite Science" is equally suggestive, though Dr. Hoernle says. "it cannot prevail by the side of the more suggestive name of the rival work of Vāgbhaṭa the elder."

3. Again in arguing against Prof Jolly, Dr. Hoernle has attached much importance to the word "lately" by which Suśruta is ruled out by date. Admitting the validity of such reasoning, it does not follow that by the word "lately" I'Tsing meant any contemporary author or any one who preceded him by a short period only. To comprehend the meaning of the sentence we must understand the word "lately" in connection with the word "formerly" used before ¹. Now the sentence "The science of medicine formerly existed in eight books" no doubt refers to the division of Ayurveda into eight parts by Brahmā and to the treatises on the different branches of Medicine by Agnivesa, Suśruta and others. These treatises are believed to be of remote antiquity, and so any later compilation may be spoken of as recent in comparison with the old treatises of unknown ages. Thus the word "lately" may refer either to Vāgbhaṭa I or Vāgbhaṭa II, but the latter author's claim to the honour becomes reasonable considering his decided posteriority to the former and so coming within the limit of the time suggested by the word "lately."

4. Again I'Tsing refers to a book which was recognised as the standard throughout India. This may refer either to

Vāgbhaṭa I or II. But if Vāgbhaṭa I's book occupied such a position at the time of I'Tsing, it becomes difficult to imagine why Vāgbhaṭa II should write another work principally based on the work of Vāgbhaṭa I after a lapse of a century or so. Moreover, we find at the present time, that Vāgbhaṭa II's book, Aṣṭāṅga Hṛdaya Saṁhitā, has a wider popularity than the book Aṣṭāṅga Samgraha of Vāgbhaṭa I. The former has been printed many times and is widely read by the students,—so much so Vāgbhaṭa is generally known as the author of Aṣṭāṅga Hṛdaya Saṁhitā.

5. Moreover, the Arabian physician Rhazes, who is said to have lived in the ninth century (882 A.D.) in treating of the property of ginger, the common plantain or musa and other drugs, quotes from an Indian writer, whom he calls Sindaxar or Sindicara.¹ Royle says: "But in the article De Allio another Indian author is quoted, whom I have not been able yet to trace out—*Ait Sindifar* (in another place written "*Dixit sindichar*") *indianus valct contra Ventositatem.*" This Sindicara is identified with Vāgbhaṭa II of Sindh who was in his time known as a second Caraka or Cara, the syllable "ka" making no difference, as in words like "bāla" and "bālaka," both meaning a child.² We know that the Vāgbhaṭa's Aṣṭāṅga Hṛdaya Saṁhitā was one of the medical works translated by the order of Caliphs in the eighth century.³

6. The translations of the Caraka, the Suśruta and the Vāgbhaṭa occur in the Thibetan Tanjur.⁴ "George Huth,⁵

¹ Antiquity of Hindu Medicine, Page 35.

² History of Aryan Medical Science, P. 196.

³ Zeit. deut. morg. Ges. 34, p. 465.

⁴ Jour. o Soc. 1835)

⁵ Zeit. deut. morg. Ges. T (LXIX. pp. 279—284

who has recently critically examined the contents of the Tanjur, concludes that the most recent date at which it can be placed is the 8th century A.D.”¹

So I cannot avoid the conclusion that of the three authors, Suśrūta, Vāgbhaṭa I and II, to which ITsing’s remarks may refer, the last has probably the best claims to that reference ; and the date assigned to Vāgbhaṭa I may well suit Vāgbhaṭa II i.e., “as late as the early 7th century A.D.”² and possibly still earlier³ Again it is impossible for us to say whether ITsing’s remarks may not appropriately refer to other authors whose works are lost to us.

Mention should also be made of the fact pointed out by Dr. Cordier that Vāgbhaṭa is mentioned in Rājtaranginī and his date is fixed there as 1196-1218 A.D.⁴

But the name of Vāgbhaṭa does not occur in Stein’s edition of Rāj, which is no doubt the most reliable, and so we can easily dismiss this view as untenable.

Editions—Vāgbhaṭa I’s book Aṣṭāṅga Saṅgraha has been printed in Bombay.

Commentary—Arunadatta—about 1220 A.D.

¹ P. C. Ray’s History of Hindu Chemistry, Intro.. P. XXIX.

² Hoernle’s Osteology, Intro., p. 10.

³ Dr. Kunte places him “at least as early as the second century before Christ,” Vide his Intro to Vāgbhaṭa’s Aṣṭāṅga Hṛdaya Saṅhītā.

⁴ सिंहशृङ्गसुतः परस्वैङ्गी वाग्भटाचार्यः कास्सौरेनगरपतिः जयसिंहस्य मज्जापालन समये (ख. द्वादश अताच्चार्य, शक १११—४०) वर्तमाना आसीत् ।

Quoted in Cordier’s Vāgbhaṭa et L’Aṣṭāṅgahṛdaya Saṅhītā, 1896.

VĀGBHĀTA II.

The next great authority in Hindu medicine is Vāgbhāta II, son of Simha Gupta, an inhabitant of Sindh.¹ His work, *Aṣṭāṅga Hṛdaya Saṃhitā*, the author himself states, is based on the summary of Vāgbhāta the elder.² In the first chapter of *Sūtra Sthāna*, he acknowledges the help he received from the works of Agniveśa, Hārita, Bhela, and others.³ The fact that Caraka is not referred to here as one of the sources of Vāgbhāta II has been taken advantage of by some to prove the posteriority of Caraka.⁴ They conclude that Agniveśa and Suśruta wrote their works long before him, and the Agniveśa Tantra was not called by the name of, and in fact was not as yet edited by, Caraka, at the

¹ लिप्तगवरी वाभट इल्लमुनमे
पितामही नामधरोऽस्मि यस्य
सुतीऽभवत्स्य च सिहगुमः
तस्यायाइम् तिम्बुसु जातजन्मा ॥
Aṣṭāṅga.

² *Aṣṭāṅga Hṛdaya Saṃhitā*, *Uttara Sthāna*, Ch. XL, v. 82.

See foot note 2, p. 18.

³ ब्रह्मा स्त्वलाऽऽयुष्मी वेद प्रजापतिमजियहत् ।
सीऽप्तिवनौ तौ सहस्राचं सीऽन्तिपुत्रादिकान्मुनीन् ॥४॥
तेऽप्तिवेशादिकांस्ते तु पृथक् तन्नाणि तेनिरे ।
तेभ्योऽसिविष्टकौर्म्मेभ्यः प्राप्यः सारतरीच्यः ।
क्रियतेऽप्तिवेश्वर्यं नातिसंक्षिप्तविसरम् ॥५॥

Aṣṭāṅga Hṛdaya, *Sūtra Sthāna*, Ch. I.

⁴ "It would appear also that at the time Vāgbhāta lived, Agnivesha's work was not called by the name of Caraka, and Suśruta had also been written. Hence it follows that Caraka's edition of Agnivesha, that is the work now called Caraka, was probably edited after Suśruta had been written."

time Vāgbhaṭa II flourished. The argument is however not conclusive; it only shows that the Agniveśa Tantra was available to Vāgbhaṭa II in its original form. No definite results can be expected from this *argumentum ex silentio*. Again it may easily be imagined, and I think it is the right view of the question, that Caraka lived and edited Agniveśa's work long before Vāgbhaṭa, the reason of Caraka being not mentioned in Vāgbhaṭa's book, is the fact that Caraka did not usurp the authorship of Agniveśa Tantra but clearly states at the end of each chapter the real nature of his share in the authorship of his book in the following words:—"Here ends the chapter of Agniveśa Tantra as corrected and edited by Caraka." Many modern text books of medicine have been edited and improved, though the books are still called after the original authors. Moreover to make Caraka flourish after Vāgbhaṭa II would bring him to quite modern times.

We are however arguing on false premises. Though Caraka is not mentioned in the Sūtra Sthāna of Aṣṭāṅga Hṛdaya, his name occurs in the Uttara Sthāna.¹ So there can be no doubt that Caraka's edition of Agniveśa was current in India long before Vāgbhaṭa II wrote his Aṣṭāṅga Hṛdaya Saṃhitā.

¹ यदि चरकसंबोधीते तद्भुवं सुशुतादि
प्रशिग्निदितगदाना नाममाचेऽपि वाच्यः ।
अथ चरकविहीनः प्रक्रियायामखिद्रः
किमिह खलु करीतु व्यधितानां वराकः ॥४६॥

* * * *

स्वप्रियस्याते प्रीतिश्चेन्मुद्ग्रा चरकसुशुतौ ।
मेऽप्यायः किं न पश्यन्ते तस्माह्नात्यं सुभाषितम् ॥५३॥

Editions.—There are various editions of the book but the following are reliable:—

1. By Dr. Anna Moreśvara Kunte, M.D., 2 vols., Bombay, 1880; 2nd Ed., 1891.
2. By Jibānanda Vidyāsāgara, Calcutta, 1882.
3. By Vijayratna Sen Kaviranjana, Calcutta, 1885-90.
4. By Ganeś Sastri Tartevidya, Bombay, 1888.
5. In Sanskrit and Bengali, with the commentary of Arūṇadatta by Vijayratna Sen Gupta, Calcutta, 1888.
6. In Sanskrit and Guzrathi by Behicharlal Nathuram, Ahmedabad, 1889.
7. In Sanskrit and Bengali by Kāliśa Cundra Sen Gupta, Calcutta, 1890-1892.
8. In Sanskrit and Hindi by Pandit Robi Dutta, Bombay, 1890.
9. In Sanskrit and Marathi by Ganeś Kṛṣṇa Garde, Poona, 1891.
10. In Sanskrit and Bengali by *Kavirāja* Binod Lāl Sen, Calcutta, 1891-1892.

*Commentaries.*¹—

1. Sarvāṅga Sundari² by Arūṇadatta, son of Mṛgāṅka-datta, 1220 A.D.

¹ See Cordier's *Vāgbhaṭa et l'Aṣṭāṅgahrdaya Saṃhitā*, P. 6.

² इति श्रीमृगाङ्गदत्तपुत्र श्रीमद्वस्त्रदत्तविरचितायाः



2. *Āyurvedadarśayana* (Dinacharyā Prakarana) by Hemadri or Kamadeva, Raja of Devagiri. It is available in parts only.
3. *Aṣṭāṅgahṛdayarddyota* by Aśadhara Sallaxana.
4. *Padārthacandrikā* by Candracandana.
5. *Saṅketamañjari* by Dāmodara.
6. *Aṣṭāṅga Hṛdayatikā* by Rāmanāth Vaidya.
7. *Vālāprobodhikā* (Anonymous).
8. *Hṛdayabodhikā* „
9. *Pāṭhya*.
10. *Vāgbhaṭartha Kaumudi* by Hari Kṛṣṇa Sen Mullick.
11. *Pradīpa* by Jaśodānandan Sarkār, 1298 B.S.

VĀGBHATA III.

The author of *Rasaratna Samuccaya* in the Colophons at the end of each chapter identifies himself with Vāgbhaṭa II. "Here ends Book first (or so) of R.R.S composed by Vāgbhaṭa, son of Simha Gupta, prince of physician." The salutation at the beginning of his book is strictly Buddhistic. The probable date of the book is "placed between the thirteenth and fourteenth centuries A.D."² "The chemical knowledge, as revealed in Vāgbhaṭa is almost on a par with that in the Suśruta," whereas the R.R.S. indicates an advanced state of that science. He quotes *Rasārṇava* as a source of his information; he does not mention opium as a medicine, and the *Firaṅga roga* and its treatment find no place in his book.

MĀDHAVAKARA

He is the author of the famous work on Pathology or *Nidāna*. His book was translated into Arabic by the order of Harun-Al-Rasid and so the most recent date that can be assigned to him is the seventh century A.D.¹ Thakore Saheb of Gondal identifies him with Mādhabācāryya, the celebrated author of *Sarvadarśana Saṃgraha*, the brother of Sāyana, the commentator of the Vedas.² I do not find any authority for such an assertion and here is an example of fallacious reasoning based simply on the identity of names. Mādhabācāryya and Sāyana lived in the twelfth century A.D. Mention should also be made of the view expressed by Dr. Hoernle as certain that Mādhavakara, the author of *Nidāna* and Vṛnda Mādhava, the author of *Siddhayoga* are one and the same person. He holds that Vṛnda is the real name, but he was known to the commentators as Mādhava, for his melodious diction. There is no proof given of this opinion, and we have reasons for not accepting it. However as he does not treat of surgical instruments, his work is not important to us.

CAKRAPĀNIDATTA.

Cakrapānidatta or more commonly Cakradatta in a Colophon³ has given an account of himself in his book called

¹ Jolly's Indian Medicine, ff. 5, 6, pp 7-9

² History of Aryan Medical Science, Ch II, p. 35.

³ गौडाचिनाय रसवल्लाचिकारिपात्र—

नारायणस्य तनयः सुनयोऽन्तरङ्गात् ।

भानोरत्नु प्रथितलीव्रद्धलीकुलीनः

वी—क्षर्तुं पदाचिकारी ॥

Colophon in

ta

Cikitsā Sāra Saṅgraha: "The author of this work is Śrī Cakrapāṇi who belongs to the family of Lodhravali; and who is the youngest brother of Vānu and the son of Nārāyaṇa, the superintendent of the kitchen of Nayapāla,¹ the king of Gour" This book is arranged on the plan of Vṛnda in his Siddhayoga² which again follows closely as a companion volume to Mādhava's Nidāna.³ The age of Cakradatta is about 1060 A.D.; and Vṛnda must have flourished between Mādhava and Cakrapāṇi for he quotes the former while he is himself quoted by the latter. So the probable age of Vṛnda is the ninth century A.D. Besides being a celebrated author, Cakradatta wrote excellent commentaries of Caraka and Suśrata. His extant works are—

1. Cikitsā Sāra Saṅgraha or Cakradatta. A treatise on Medicine

¹ For the date of Nayapāla, vide Cunningham's Archaeo. Survey of India. III P. 119; also J. A. S. LX Pt I. P. 46. Life of Atisa by S. C. Das.

²

यः सिद्धियोगसिद्धिताविकसिद्धियोग—

नदैव निष्पिति कैवल्यमुद्धरेवा ।

भद्रचयचिपथविदविदा जनेन

दत्तं पतेत् सप्तदि मूर्धनि तस्य शापः ॥

Slōka at the end of the Cakradatta.

य इत्यादौ ।—सिद्धियोग इति इन्द्रक्षतसंचहस्य संज्ञा, तङ्गिक्षतयोगसप्तदिविका ये च सिद्धियोग अच संदर्भे चक्रास्तानविक्योगान् तदैव सिद्धियोगे निष्पिति, तथा यो वा वानविकसिद्धयोगानित, संयह्नादुडरेत् दूरीकुर्यात्, तस्य मूर्धनि र्द्वृश्चेन पुसा दत्तः शापः पतेत् । कौटशेन पुसा ? भद्रचयचिपथविदविदविदा । कारिका उड्डीका चन्द्रटीकैति भद्रचयं, चिपथविदः च्छयजुःसामङ्गपः, तदिदा ॥

Sibadāsa Sen's Commentary.

³ इन्द्रैव * * * * * सुलिङ्गते बदविनिष्पयक्रमेव ॥

2. Cakradatta or *Materia Medica*. It treats on drugs applicable to a number of deseases.
3. *Muktābali*. This treatise on the nature and properties of medicinal drugs is ascribed to Cakrapāṇi.
4. *Vānumati*—Commentary on *Suśruta Saṃhitā*.
5. *Cakratattwadipikā*—Commentary on *Caraka Saṃhitā*.

Editions.—

1. Cakradatta or *Cikitsā Sāra Saṃgraha* edited by *Kavirāja* Pyāri Mohan Sen Gupta, Calcutta, 1295 B.S.
2. Cakradatta with Bengali translation by *Candrakumāri Dās Kavībhuṣan*.
3. Cakradatta with Bengali translation and with commentary of *Siva Dās* Sen, by *Jaśodā Nandan Sarkār*, 1302 B.S.

SĀRANGADHARA.

He wrote *Sārangadhara Saṃgraha*. It is compiled from the works of *Caraka*, *Suśruta*, *Vāgbhaṭa* and others¹. It is very popular in Western India. It treats on nosology and practice of Medicine. He was the son of *Dāmodara* and flourished in the fifteenth century A.D.

Edition.—By *Kavirāja* Pyāri Mohan Sen Gupta, Calcutta, 1296 B.S.

¹ प्रसिद्धयौगा सुनिमिः प्रयुक्ता
शिक्षित्सकै वै वड्डमीडनुभूताः ।
विधीयते शार्ङ्गधरेण लेषां
सुरंगद

Commentary.—Sāraṅgadharatikā: It is a commentary on the above work by Adhamulla.

BHĀVA MIŚRA.

About 350 years ago, a compilation was made by Bhāva Miśra, son of Lataka Miśra, an inhabitant of Benares, from the most celebrated medical works and was called Bhāva Prakāśa.¹ He lived about 1550 A.D and was considered a "Jewel of Physicians and Master of Sāstras." He mentions China root called Tob Chini² in the Vernacular as a remedy of Firaṅga roga or Syphilis³ which he describes for the first time in India. He was the first to make mention of certain drugs of foreign countries as Badhkshani Naspasi,

I आयुर्वेदात्मिकादतिनिमित्तमिन्दी धीगरवानि यत्रा-
जन्मा से से निवर्धनं धुरगिलजन व्यक्तिविक्ष्यसनाय ।
तत्तद् यन्मादृग्हीतैः सुवचनमणिभि भावमिश्रविकिता
शास्ते जाग्नाम्बकारं प्रशमयितुमिमं सम्बिधते प्रकाशम् ॥

Bhāva Prakāśa, I. i.

इति श्रीमिश्र लटकतनय श्रीमिश्रभावविरचिते
भावप्रकारे षष्ठं प्रकरणं सम्पूर्णं ॥

Colophon at the end of Section I.

2 ईपालरवचा किञ्चित्कीरणा वज्रिदीमिष्टत् ।
विवन्धाभानशुलग्नी शङ्खन्दूचिश्चिनी ॥
वातव्याधीनपक्षारमुनार्दं तनुवेदनाम् ।
व्यप्रीडिति विशेषेण फिरङ्गामयनाशिनी ॥

Bhāva Prakāśa, I. i.

3 फिरङ्गसंजकै देशे वाहुल्येन वहवेन ।
तथात् फिरङ्ग इत्युक्ती व्याविर्बाधिविशारदैः ॥

Bhāva Prakāśa, II. v

Khorasani and Parasika Vacha (Acorus Calamus), Sulemani Kharjura (date fruit of Suleman),¹ and opium.

Editions.—

1. By Jibānanda Vidyāsāgara, Calcutta, 1875.
2. By Rasik Lāl Gupta.
3. By Kāliśa Candra Vidyāratna.

Besides these books, the number of Sanskrit medical works is simply legion, many of them are daubed with fancy names and are excellent treatises on the different branches of medical science. But they are quite foreign to our purpose. I intend to publish in a separate volume short notices of the medical authors and their works, and so we need not dwell on them here.

¹ पारसीक थवानी तु यवानी मटशी गुणैः ।
विशेषात् पाचनी रुचा ग्राहिणी मादिनी गुरुः ॥

Bhāva Prakāśa, I.

पारसीकवचा शक्ता प्रोक्ता हैनयतीति सा ।
हैमवत्युदिता तद्वातं इन्ति विशेषतः ॥

Ibid.

उक्तं खसफलचीरभाफूकमहिर्फणकम् ।

Ibid.

चीनाक सज्जः कपूरः कफवयकरः सूतः ।

Ibid.

द्वन्द्वं गीलनाकारा परद्वैपादिहागता ॥

Ibid.

CHAPTER II

HOSPITALS AND DISPENSARIES.

Before entering into our proper subject, it would not be amiss to notice here two objects—Hospitals and Anæsthetics—which are essentially necessary for the development of surgical knowledge. We know from the Edict II of Aśoka that India during his reign was studded with hospitals not only for the treatment of human beings but also for the brute creations. But even before Aśoka, hospitals flourished in India. In Caraka we can trace the germs of such an institution though it was used for rich men and did not accommodate the public.¹

¹ दृष्ट निवात प्रवार्तेकदेश सुखप्रविचारमनुपव्यक धूमातपरजसामनभिगमनीयमनिष्टानाच्च
श्वस्त्र-स्पर्श-रस-रूप-गव्याना सीपानीदूसलमुषलवर्चःखानस्त्रानभूमिमहानसीपित वासुविद्या-
कुशलः प्रशस्ते रथमेव तावत् पूर्वमुपकल्पयेत् ।

ततः श्रीलश्चौबानुरागदात्यप्रादचिर्योपपन्नानुपचारकुशलान् सर्वकर्मसु पर्यवदातान्
सूपीदमपाचकसापकसंवाहकीत्यापकसवेशकैषषपेषकाच्च परिचारकान् सर्वकर्मस्प्रति-
कुलान् । तथा गीतवादित्रीप्लापकश्रीकगाथाभ्यायिकेतिहास-पुराणकुशलानाभिप्राय-ज्ञाननु-
सताय देशकालविद् परिशद्याच्च । तथा लावकपिङ्गलशशहरिष्णैनकालपुच्छकमुशगमात्रकी-
रमान् । गाञ्छ दीर्घौ श्रीलवतीमनातुरा जीवडन्सा सुप्रतिविहितहृष्णशरस्पानीयाम् । अल-
पाचाचमनोद्दिकोषमणिकपिठरचटकुम्भीकुम्भकुरुशररावद्वीकपरीपचनमस्यानचेलसूचकार्पासी-
र्णोदीनि च अश्वनासनादीनि चौपम्यस्मद्भ्रातपतियहाणि सुप्रयुक्तासरणीतरमच्छदी
पवानानि स्खापाच्यथानि सवेशनीपवेशन्ते हस्तिदास्यद्विप्रदेहे परिषेकालुलेपनवस्त्रविरेचना-
स्खापनातुवासन-शिरीचिरेचनमूर्च्छाचारकर्मस्यामुख्यचारमुख्यानिसुप्रचालितीपवानाच्च स्नानश्वर-
मव्यक्ता दृश्य श्वस्त्राणि चीपकरणार्थानि ।

धूमनेत्रं वस्त्रिनेत्रं चोत्तरवस्त्रिकच्च । कुशहस्त्रं तुलाच्च मानभाण्डच्च दृततेलवस्त्रामन्त्रच्छीद्र-
फाणितलवस्त्रेभ्यनोदक-मधुमुरासीवीरकतुषीदकमैरेयमेदकदधिमखोदधिव्वानप्राप्तमूर्च्छाणि च ।
तथा अलिष्टिकमुद्भाषयवतिखुकुलत्यवद्वृद्धीकापूष्पकाभयामलकविभीतकानि नाना-
विधानि च द्रव्याणि ते यमाणि संयुक्तीवदीप-
समाध्यातानि घौषधानि वस्त्राम्यदपि विफ

He advises us as follows :—The engineer is to erect a strong and spacious building, well-ventilated at one part, the other part being free from draughts. The scenery should be pleasing and one should feel happy to walk in it. It must not be behind any high building, nor exposed to the glare of the sun. It should be inaccessible to smoke and dust. There must not be anything injurious to our senses as regards sound, touch, taste, form and smell. There should be stairs, large wooden mortars and pestles ; and there must be additional bare ground for the construction of a privy, bath-room and kitchen. The staff should consist of servants and companions. The servants should be good, virtuous, pure, fond, clever, generous, well trained in nursing, skillful in works, able to cook rice and curries well, competent to administer a bath, expert masseur¹, trained in raising and moving a patient, dexterous in making or cleaning beds, practiced in the art of compounding medicines and willing workers not likely to show displeasure to any order. The companions should be good singers and musicians, fluent speakers, well-versed in distichs, ballads, tales, history and mythology, well-acquainted with the design of a patient's nods or signals, agreeable and should have knowledge of the season and the locality. The various kinds of animals

¹ From the accounts of Megasthenes, we learn that four attendants used to massage him (Candragupta) with ebony rollers during the time that he was engaged in disposing of cases. Such an attendant (saṁvāhaka) is a minor character in the Toy Cart or little Clay Cart, drama, transl by Ryder, in Havard Oriental Series, Vol IX, 1905—Smith's Early History of India, 2nd Ed , Page 122 Footnote. We also find in the Kāmandikya Nitisāra that the king is cautioned against shampooers who have the opportunity of poisoning him.

सूदव्यञ्जनकत्तरिरस्त्रपका व्ययकास्था ।

मीकाकाश नादस वाहका अपि ॥

should always be kept in stock such as Lāva (*Perdix Chinensis*), Kapinjala (partridge), hares, sheep and the different kinds of deers, Ena (the black antelope) blacktailed deer, and Mrgamātrka. There should be a dairy attached to the building. The cow should be good natured and healthy, and should yield profuse milk. The calves must be living. There should be stocked for them potable water and hay in a clean fold. In that building must be kept the following necessary articles :—

Water vessels, washing basins, tubs, jars, dishes, ghata, (small jars) kumbhī, kumbha (larger and smaller vessels), kundu (jug or pitcher), soraba (earthen basins), spoons or ladles, cooking utensils, churning rods, cloth, thread, cotton, wool, bedding and asana (seats). Near them should be placed drinking vessels of gold and spittoons. The bedding should consist of a broad carpet, bed-sheet, pillows, and a bedstead. There should be collected good furnitures for beds and seats, and also utensils and appliances for application of oleaginous medicines, heat, oil, ointment, bath and perfumeries, and for the acts of emesis, purgation, draining of the brain, injection into the rectum, defaecation and urination (*i.e.* Vastiyantra, urinal, bed-pan &c.). The blunt and sharp instruments and their accessories, well-washed mullers and whetstones of different degrees of smoothness—polished, plain or rough—should be near at hand, the tubular instruments for fumigation, inhalation and injection into the rectum, urethra and vagina, should be available there; and the following articles are also to be stocked :—brushes and brooms, weighing scales and weights, ghee (melted butter), oil, fat, marrow, honey, molasses, salt, wood, water-spirituous liquor formed by steeping husked grains of barley in water or by boiling together the husks of fried māskalāya

(pulse of Phaseolous Rox), barley and water, spirituous liquor from the blossoms of Lythrum Fruticoscence with sugar, spirit distilled from the different sorts of grains, curdled milk, rice, gruel, whey, sour liquid produced from the acetous fermentation of powdered paddy, and the various kinds of wines of animals. Different kinds of rice such as Śāli (or that reaped in cold season) and Sasṭhika (or that grown in hot weather in low lands and reaped within sixty days of its sowing), Mudga (Phaseolus mungo), Māṣa (Phaseolus Rox), Yava (Hordeum Vulgare), sesame (Seasamum Indicum), Kullatha (Dolichos Biflorus), plums (Zizyphus Jujube), raisins (Vitis Vinifera), Paruṣa (Grewia Asiatica), Abhayā (Chebulic Myrobalan), Āmlakī (Phyllanthus Emblica), Vibhītaka (Terminalia Bellerica) and other classes of medicaments, as oils, diaphoretics, sternutatories, cathartics, emetics, purgatives, astringents, stomachics, digestives, calmatives, carminatives and various other forms of medicines, are required for treatment. Besides these, there must be stored the antidotes to poisons caused by overdoses of medicines and other appliances likely to add to the patient's comfort

To this may be compared the description of the Greek iatrum, which is mentioned in the Hippocratic treatise, *De Medicis*. He directs that "it should be so constructed that neither the wind nor sun might prove offensive to the patient, and goes on to enumerate the various articles which it should contain, such as scalpels, lancets, cupping-instruments, trepans, raspatories, with bandages and medicines." 1

Suśruta gives us a list of appliances¹ required in surgical operations:—

1. Blunt Instruments.
2. Sharp Instruments.
3. Potential Cautery.
4. Actual Cautery.
5. Salākā or rods.
6. Horns.
7. Leeches.
8. Hollow bottle gourd.
9. Jāmbav-ousta [a bougie of blackstone, the extremity of which is shaped like the fruit of the Jambul tree (*Urginea Jambolana*)]
10. Cotton.
11. Pieces of cloth.
12. Thread.
13. Leaves.
14. Materials of bandaging.
15. Honey.
16. Ghee, or clarified butter.
17. Saet.
18. Milk.
19. Oils.
20. Tarpan—flour of any perched grain or condensed milk etc. mixed with water to mitigate thirst.
21. Decoctions.
22. Liniments.
23. Plasters.
24. Fan.
25. Cold and hot water.
26. Iron pans, kalasi and other earthen vessels; beddings and seats.
27. Obedient, steady and strong servants.

The Lying-in-room—Caraka says: ‘Before the ninth month of pregnancy, the lying-in-room should be constructed. The land should be cleaned of bones, gravels and potsherds. The ground selected should be of auspicious colour, taste and smell. The gate of the house should face towards the east or the north.² There must be a store of wood such as Vilva (Eagle

¹ अदीनामतं कर्त्तं चिकीर्षता देवीन पूर्णमेवोपकर्त्पयितव्यानि तद्यथा यज्ञशस्त्रावान्नप्रियस्त्राकाश्वद्वलोकाम्लावूक्वाच्चीक्षिच्छुर्वात्सूचपत्रपद्मधूष्टतवसापथ्यहैलतपनकषायनेपन कल्पव्यक्तवशीदीशीदक कटाहदीनि पांरकम्भेणाऽन्न स्त्रिगदाः स्त्रिरा वत्तवन्तः।

Suśruta Saṃhitā. I. v

² “The best sort of ground should abound with milky trees, full of fruits and flowers; its boundary should be of a quadrangular form, level and smooth, with a sloping declivity towards the east producing a hard sound, with a view from left to right of an agreeable door, fertile of an unfirm

Marmelos), Tinduka (*Diospyros Embryopteris*), Inguda (*Balanites Rox*) Bhallākaka (*Semecarpus Anacardium*), Vārunā (*Ocimum Basilicum*), Khadīra (*Acacia Catechu*) or wood of other kinds said to be auspicious by a Brāhmaṇa versed in the Atharvaveda; and there must be a sufficient provision for clothes, liniments, and covers. For the pregnant woman, be careful to have a fire-place, water, pestles and mortars, a privy, a bathing place, and ovens. These should be constructed according to the science of engineering and should be pleasant with regard to the season. There should be collected clarified butter, oil, honey, different kinds of salts as rock salt, sonchal salt, and black salt, Vidañgas (*Embelic Ribes*), treacle, Kuñṭha (*Saussurea Lappa*), Kiliṇa (*Pinus Deodara*), Nāgara (dried root of *Zinziber Officinale*), Pippalī (*Piper Longum*), its root, Hasti-pippalī (*Scindapsus Officinalis*), Mandukpāṇi (*Hydrocotyle Asiatica*), Elā (*Elettaria Cardamomum*), Lāngolī (*Gloriosa Superba*), Vāca (*Acorus Calamus*), Cavya (*Piper Cava*), Chitraka (*Plumbago Zeylanicum*), Chiravilva (*Pongamia Glabra*), Hingu (*Ferrula Assafætida*), Sarsapa (Mustard seeds), Laśuna (*Allium Sativum*), finely or thickly powdered rice, Kadamba (*Anthocephalous Kadamba*), Ātasi (*Linum Usitatissimum*), Vallija (*Cucurbita Pepo*), Bhurya (*Betula Bhojpatra*), Kulatha Dolichos *Uniflorus*), Maireya (a spirituous liquor from the blossoms of *Lythrum Fruticoscence*) and Āshava (Vinous fermented liquor from sugar or molasses, Rum). Also collect two pieces of

colour containing a great quantity of soil, producing water when dug to the height of a man's arm raised above his head, and situated in a climate of moderate temperature."

stone (muller and stone slabs), two pestles, two mortars, an ass, a bullock, two sharp needles of gold and silver, two skeins of threads, sharp instruments of steel, two wooden bedsteads (*Ægle Marmelos*), and wood (*Tinduka* and *Ingudi*) for easily igniting fire. The female attendants should be mothers of children, and friends and relatives of the patients. They must be fond of her, skillful in work, intelligent, jolly, laborious full of tender love for the children and a favourite of the mother.”¹

The Child's Room —He continues—‘ The engineer is to construct a room, spacious, beautiful, full of light, well-ventilated but free from draughts, strong, and free from beasts of prey, animals with fangs, mice and insects. There should be kept water, mortar and separate places should be assigned for bathing, cooking, urination and defaecation. It should suit the season of the year. The beddings, seats and covers should be comfortable and suitable to the season. Auspicious ceremonies should be performed in that room such as *homa*, expiations and presents to gods, for the proper protection of the child, and there should be present pious old men, doctors, and devoted

¹ प्राक् चैवास्ता नवमान्नासात् सुतिकागारं कारयेदपहृतास्थिशर्कराकपालेदेश प्रशस्त-
कपरसवन्धादां सूसी प्राप्त्वात्मुदग्दारं वा । तत्र वैत्वाना काषाना तिन्दुकैहृदाना॑ भस्तात्-
काना॑ चाक्खाना॑ खदिराना॑ वा यानि चानान्वपि ब्राह्मणाः श्वेतुरथर्ववेदविद्वाहसनालेप-
नाश्वादनापिधानसन्धुर्पतं तत् । वास्तुविद्या-हृदयोग्निप्रिसलिलालुखलवर्चःस्थानस्तानभूमि-
महानसहस्रसुखब्धः । तत्र सपिंस्तेवमधुसैन्धवसौवर्चलकाललयवणविड्गुड्कुष्ठकिलिमगागर-
पिष्पद्वीमूलहसिपिष्पलौमरुकूपर्च्छेप्लालाङ्गलौवचाच्चचित्तकचिरवित्तव्यहृदुर्सर्पय लशुनकन-
कनिकानीपातसीवत्त्विजमूर्खाः कुलत्यैरेयसुरासवाः सत्रिवृत्ताः स्त्राः ॥ वद्याश्मानौ
हौ है चख्नन्नश्वले है चलुखले खरो द्रुष्मद्य हौ च रीक्षां॑ सूचीपिष्पलकौ सौवर्णराजतौ है
श्वलाणि च तीक्ष्णाकवानि हौ च विश्वमयौ पर्यंद्वौ तैन्दकैहृदानि काष्ठन्नप्रिसम्भुदणानि
स्त्रियस्य वह्नी॑ वह्नी॑ प्रजापताः सौहार्दयुक्ताः सततमनुरक्ताः प्रदक्षिणाचाराः प्रतिपत्तिकृशलाः
प्रकृतिवत्सस्त्वास्त्वकविषादाः क्लेशत्तिहिणवीडभिमता ब्राह्मणसार्ववेदविद्वद्यो यज्ञान्वदपि तत्र
समर्थं मन्त्रेत यत्र ब्राह्मणा॑ ब्रूपुः स्त्रियस्य इदास्तत्काव्येभ्यः ।

attendants constantly. The child's bed covers and sheets should be soft, light, pure and scented. These should always be free from sweat, dirt, worms or bugs, urine and faeces. If repeated change of new clothes be impossible, the soiled coverings should be well washed and the beddings well purified with steam and thoroughly dried before they are used again. To purify or sterilise the dress, beddings, coverings and sheets by fumigation use the following medicines with clarified butter—Barley (Hordeum Vulgare), mustard seeds, linseeds, assafœtida, Guggula (Balsamodendron Mukul), Vāca (Acorus Calamus), Coraka (Andropogon Aciculans), Vayasthā (Chebulic Myrobalan), Golomī (Panicum Dactylon), Jatulā (Nardostachys Jatamansi), Palankasā (a variety of Guggula), Aśoka (Saraca Indica), Rohinī (Picrorhiza Kurroa) and sakes' skin ... A variety of toys to please the child should be at hand and these should be coloured, light, musical, beautiful and must not be sharp pointed. They should be of such a size and shape as cannot be put into the child's mouth or do not terrify or kill the child.”¹

¹ अतीङ्गतरं कुमारागारविधिमनुव्याख्यास्यामः ॥ वास्तुविद्याकुशलः प्रशस्त रम्यमतमस्त्वं निवातं प्रवातैकदेशं दृढमपगतश्वापदपश्चिमूषिकपतङ्गं सुर्विभक्तसखिलीदूरखलमूच्चवर्चः स्थानक्षानभूमिमहानस्तुतुसुखं यथत्तुं श्वयनासनालरणसम्पन्नं कुम्हात् । तथा सुविहित-रक्ताविधानवलिसङ्गलहीनप्रायविचित्रं शुचिर्भज्जवेदानुरक्तजनसम्पूर्णमिति । कुमारागारविधिः ॥ श्वयनास्तरणप्रावरणानि कुमारस्य स्तुलस्तुशुचिसुगम्भीनि स्युः । स्वेदमलजन्तुमनि सूत्रपूरी-घीपस्त्रानि च वेऽर्ज्यानि स्युः ॥ अर्सति सम्बविन्द्येषा तान्येव च सुप्रचालितपीधानानि सुधूषितानि सुशुद्धशुक्तारण्युपयोगं गच्छेयुः । धूपनानि पुनर्वाससा श्वयनालरणप्रावरणानां व्यवसर्पतात्सीहिन्दुगुणगुलवचाचीरकवयं स्थागीलीमीजटिलाप्रलङ्घाशीकरोहिणीसर्पनिमोर्मोकानि धृतसम्बुद्धानि स्युः ॥ सरणश्च धारणीयाः । कुमारस्य रुद्रारुद्रगवयवृषभानो जीवतामेव दक्षिणेष्यो विषार्थ्यीऽयाणि गृहीतानि स्युः । मन्त्राद्याशौषधयो जीवकर्षभकौ च यान्वयन्वानि ब्राह्मणा प्रशंसेयुः । क्लीडनकानि खेलस्य तु विचित्राणि घीषवल्यमिरा-माणि अगस्त्यतौच्याणानि अनाम्यप्रवेशीनि अप्राप्यहराणि अविद्यासनानि स्युः ॥

Suśruta directs that there should be a particular room provided for patients who have undergone surgical operations.¹ "Patients suffering from surgical diseases as inflammatory swelling, wounds &c. should, from the very commencement of their illness, confine themselves inside a clean house, situated in a wholesome locality, free from draughts and not exposed to the glare of the sun. For in such a building, constitutional, mental and accidental diseases are not likely to occur. In that room, the bed for the patients should be soft, spacious, and well-arranged. The patient should lie down, his

¹ ब्रह्मिनः प्रथममेवागारसच्चिर्ज्ञानागारं प्रश्लक्षावासादिकं कार्यं ।

प्रश्लक्षावासु निरुद्धे शुचावासपवच्छिंते ।

निवात न च रीगाः सुः शरीरागच्छमानसाः ॥

दक्षिण् श्वयनभस्मार्थं खालीर्णं मनोऽन्नं प्राक्षिप्तस्तु सश्वत् कुर्वेति ।

मुखच्छिष्टप्रचारः सात् खालीर्णं श्वयने ब्रह्मी ।

श्राव्या दिशि स्थिता ईवासतपूजार्थं नतं शिरः ॥

तस्मिन् सुहृद्विरतुकूलैः प्रियम्बदेक्षपास्यमानी वयेष्टमासीत् ।

सुहृद्वी विचिपत्वाणु कीर्त्तिर्भवेद्वद्वाः ।

आप्वासदन्तो वहशत्वरकूलाः प्रियम्बदाः ॥

न च दिवानिद्रावश्यः सात् ।

दिवास्तप्ताद्वये करुणांवार्णं गौरव तथा ।

श्वयद्युक्तं द्वन्द्वारागः खालीव भर्तु भवेत् ॥

चत्वानसंवेशनपरिवर्तनं चक्रमणीचैभावणादिषु चाम्बवास्त्रास्पदमत्तो व्रणं सर्वचत् ।

स्थानासनं चक्रमणा यान्यानातिभाषण ।

ब्रणवान्न निषेदेत शक्तिमानपि मानवः ॥

चत्वानाद्यासनं स्थानं शश्या धातिनिषेदिता ।

प्राप्तुयाचाचताद्वं रुजस्त्वादिवर्ज्यदीत् ॥

अस्थायाच्च स्तोत्राणां सन्तुष्टिन्नमस्त्रावाप्यसंस्यर्थनानिद्रूतः परिहर्ते ।

head pointing towards the east, and keep there some weapon for his own protection. On such a bed, the patient can lie comfortably and turn to his sides at pleasure. He should be surrounded by his dear friends, for their sweet words relieve the pain of inflammation. The female friends, however, should be avoided and kept at a distance. He should observe strictly the orders of the surgeon as regards his food, drink and mode of living. He should have his hairs clipped and nails pared short, be pure in his person, put on white clothes and devote himself to religious duties. A light should be kept burning and garlands of flower, weapons &c., should be provided in the room to ward off the demons. He should be cheered and inspired by pleasant stories, and the physicians and the priests should attend the patient morning and evening. Pastils made of *Sinapis Nigra* and *Azadirachta Indica* with clarified butter and salt, should be burnt in the room morning and evening for ten days continually. The inflamed part should be fanned with a *camar* or yolk-tail. Sleep during the day, exercise and sexual intercourse must on no account be indulged in."

Susruta also describes the kitchen of the king thus:— "That is the proper kitchen which is built on good ground, towards an auspicious quarter, full of utensils for cooking, spacious, clean, provided with windows guarded by a network, frequented by friends, cleared well of grass furnished with a canopy, purified by auspicious ceremonies, and managed by men and women of good character. The superintendent of the kitchen should, like the doctor, be noble and virtuous. The cook and servants should be pure, noble, capable, mild good looking engaged in their respective duties high minded should have the hairs and nails cut short steady

well-bathed, of subdued passion, well-dressed, obedient and have their heads well-covered."

"The doctor in charge of the kitchen should be of noble family, religious, friendly, a clever manager for getting king's food properly prepared, ever careful for his health, non-avaricious, simple, fond, grateful, good-looking, cool-tempered, well-behaved, not proud and envious, laborious, of subdued passion, forgiving, pure, of good character, kind, intelligent, not easily fatigued, always loving, well-wisher, capable, bold, clever, skillful, not unreasonably tender, provided with medicines and well proficient in the art of healing."¹

१ कुलीन धार्मिक स्त्रिय सुस्तं सततीत्यहं ।
अख्य अश्व भर्ती लक्ष्म प्रियदर्शन ॥
प्रोद्यपाकथमात्सर्वं मदाक्षरं विवर्जित ।
जितेन्द्रियं चमावतं शुचि शीलदयात्मित ॥
मेघाविनमसंश्यान्तमनुरक्तं हितैषिण ।
पट्ट प्रगल्भ नियुण दृच भायाविवर्जित ॥
पूर्वोक्तैश्च गुण्युक्तं नित्य सत्रिहितागद ।
महानसे प्रशुज्जीत वैद्य तदिवापुजितं ॥
प्रशस्तदिगद्देशकृतं शुचिभास्तं महस्तुच ।
सजालकं गवाच्चाढः मात्रवर्षं निषेवितं ॥
विकवस्तुष्ट सुस्तं सवितान लक्षार्चिन ।
परीचित स्त्रीपुरुषे भवेत्तापि महानसं ॥
तनाभ्यच्च नियुज्जीत प्रायी वैद्यगुणान्वित ।
शुचयी दक्षिणा दक्षा विनीताः प्रियदर्शना ॥
सविमक्ताः सुमनसी नौष कैश्चलखा, गिराः ।
साताढः सयमिन्, क्लतीणीषा, सुसंयुता, ॥
तस्याचाच्चा विघेयासुरा विविधाः परिकर्मिणः ।
आहारस्थित यशापि भवन्ति प्राणिणी यत् ॥
तन्मानमहानसे वैद्यः प्रसाद रहिती भवेत् ।
माहानसिक दीढारः सौपौटनिक पौपिकाः ॥
सर्वेवै यक्षग्ना ये चायन्ये तु कैचन ।
इङ्गितद्वौ मनुष्याणां वाहनेष्टमुख्यवैक्षतैः ॥

In the Kāmandakiya Nītisāra, we find the king advised to take thoroughly examined food, and to be surrounded by physicians well-versed in the science of Toxicology;¹ and again it is said that king should take his medicines, cordials, and edibles after having his medical attendants tasted them.² The king is advised to kill his enemy by weaning over his physician or by administering poisonous liquids.³

In the Mahāvāgga* we find the qualities of a good patient and a good nurse described —

“ 6. What are five qualities, O Bhikkhus, which when a sickman has, he is easy to wait upon—

When he does do what is good for him ; when he does know the limit (of the quantity of the food) that is good for him ; when he does take his medicine, when he does let a nurse who desires his good, know what manner of disease he has, or when he is getting worse that that is so, or when it is getting better than that is so, and when he has become able to bear bodily pains that are severe, sharp, grievous, disagreeable, unpleasant and destructive to life. These are the five qualities, O Bhikkhus, which when a sickman has, he is easy to wait upon.

1

विषवैरुद्दकैः स्वात विषप्रमनिभूषितं ।

परीक्षितं समश्चीयाज्ञाहृत्वाविष्पृष्टः ॥ १० ॥

Kāmandakiya Nītisāra vii. v. 10.

2

शौषधानि च सर्वानि पानं पानीयमेव च ।

तत्कथ्यकैः समाख्याद्य प्राशीयाङ्गीजनानि च ॥ २७ ॥

Ibid. vii. v. 27.

3

भिषमेदेन वा शतुं रसदानेन साध्येत् ॥ ७० ॥

Ibid. IX. v. 70.

* Mahāvāgga viii, 28 6 & 8 (Sacred Books of the East). —

8. There are five qualities, O Bhikkhus, which, when one who waits upon the sick has, he is competent to the task—when he is capable of prescribing medicines ; when he does know what (diet) is good and what is not good for the patient, serving what is good and not serving what is not good for him , when he does wait upon the sick out of love, and not out of greed , when he does not revolt from removing evacuation, saliva or vomit ; when he is capable of teaching, inciting, arousing and gladdening the patient with religious discourses These are the five qualities, O Bhikkhus, which, when one who waits upon the sick has, he is competent to the task."

There is also good deal of evidence to show that medicines were distributed free to the poor and to the pious men. When Viśakhā asked for eight boons of the Buddha, she mentioned amongst them the privilege of bestowing her life long " food for the sick, food for those who wait upon the sick and medicines for the sick " and explained her reasons as follows¹ :—

" 9. Moreover, Lord, if a sick Bhikkhu does not obtain suitable foods, his sickness may increase upon him, or he may die. But if a Bhikkhu have taken the diet that I shall have provided for the sick neither will his sickness increase upon him, nor will he die It was this circumstance, Lord, that I had in view in desiring to provide the Samgha my life long with diet for the sick.

Moreover, Lord, a Bhikkhu who is waiting upon the sick if he has to seek out food for himself, may bring in the food (to the invalid) when the sun is already far on his course, and he will lose the opportunity of taking his food. But when

he has partaken of the food I shall have provided for those who wait upon the sick, he will bring in food to the invalid in due time and he will not lose the opportunity of taking his food. It was this circumstances, Lord, that I had in view in desiring to provide the *Samgha* my life long with food for those who wait upon the sick.

10. Moreover, Lord if a sick Bhikkhu does not obtain suitable medicines his sickness may increase upon him, or he may die. But if a Bhikkhu have taken the medicines which I shall have provided for the sick, neither will his sickness increase upon him, nor will he die. It was this circumstance, Lord, that I had in view in desiring to provide the *Samgha*, my life long with medicines for the sick."

The Edict No. II of Aśoka clearly shows that charitable institutions were common in India, during his reign. The Edict runs as follows:—

" Everywhere in the kingdom of the king Piyadasi, beloved of the gods, and also of the nations who live in the frontiers such as the Cholas, the Pandyas, the realms of Satyaputra and Keralaputra, as far as Tambapani, (and in the kingdom of) Antiochus, king of the Greeks and of the kings who are his neighbours, everywhere the king Piyadasi, beloved of the gods, has provided medicines of two sorts, medicines for men and medicines for animals. Wherever plants useful either for men or for animals were wanting they have been imported and planted. Wherever roots and fruits were wanting, they have been imported and planted. And along public roads, wells have been dug for the use of animals and men."

We also learn from Huen Tsang's account that Śākoditya II

(610 - 650 A. D.) was inclined towards Budhism and he forbade the slaughter of living animals, built *stupas* and "in all the highways of the towns and villages throughout India, he erected hospices, provided with food and drink, and stationed there physicians with medicines for travellers and poor persons round about, to be given without any stint."¹

He also mentions about the father of the Bhikkhu Śrutavimśatikoti, that "from his house to the snowy mountains, he had established a succession of rest-houses, from which his servants continually went from one to the other. Whatever valuable medicines were wanted, they communicated the same to each other in order, and so procured them without loss of time so rich was this family."²

He also mentions charitable institutions called *Punyaśālās* as common in India. "There were formerly in this country (Tsch-kia-Takka) many houses of charity (goodness or happiness, *Punyaśālās*) for keeping the poor and the unfortunate. They provided for them medicines and food, clothing and necessaries, so that travellers were never badly off."³

Again he says "Benevolent kings have founded here (Mo-ti-pil-lo or Matipura) a house of "merit" (*Punyaśālās*) This foundation is endowed with funds for providing choice food and medicines to bestow in charity on widows and bereaved persons, on orphans and the destitute."⁴ A similar *Punyaśālā* or hospice was in K'ei-P'an-to (Kabandha).⁵ In describing

¹ Beal's Record, Vol. I, p. 214.

² *Ibid*, Vol. II, p. 188.

³ *Ibid*, Vol. I, p. 165.

⁴ *Ibid*, Vol. I, p. 198.

⁵ *Ibid*, Vol. II, p. 303.

Multan he says: "They have founded a house of mercy (happiness), in which they provide food, and drink, and medicines for the poor, and sick, affording succour and sustenance."¹ Of Śilāditya he says: "Every year he assembled the Sramanas from all countries, and on the third and seventh days he bestowed on them in charity four kinds of Alms (*viz*—food, drink, medicine, clothing)"²

Fa Hian (405-11 A.D.), a contemporary of Candragupta Vikramāditya, describes the charitable dispensaries in the town of Pāṭaliputra thus:—"The nobles and householders of this country have founded hospitals within the city to which the poor of all countries, the destitute, cripple and the diseased may repair. They receive every kind of requisite help gratuitously. Physicians inspect their diseases, and according to their cases order them food and drink, medicines or decoctions, every thing in fact that may contribute to their ease. When cured, —they depart at their convenience"³ Smith remarks. "No such foundation was to be seen elsewhere in the world at this date, and its existence, anticipating the deeds of modern Christian charity, speaks well both for the character of the citizens who endowed it, and for the genius of the great Aśoka whose teaching still bore such wholesome fruit many centuries after his decease. The earliest hospital in Europe, the Maison Dieu of Paris, is said to have been opened in the 7th centuries."⁴

"Upatisso, son of Buddha Das, builds Hospitals for cripples,

¹ Beal's Record, Vol. II, p 274

² *Ibid*, Vol I, p 214

³ *Ibid*, Vol I, Intro len

⁴ Smith's Early History of Ind a 2nd Ed p 280

for pregnant women and for the blind and diseased.¹ Dhatushena builds Hospitals for cripples and sick². Buddha Das³ himself ordained a physician for every ten villages on the high road, and built assylums for the crippled, deformed and destitute."⁴

The animal Hospitals or Piñjrapoles which still exist at Ahmedabad, Surat, and Sodepore in Bengal, and elsewhere may be regarded as the survivals of the institutions founded by the Maurya monarch. The following account of the Surat Hospital in the 18th century is from the pen of Hamilton:—

"The most remarkable institution in Surat is the Banyan Hospital, of which we have no discription more recent than 1780. It then consisted of a large piece of ground enclosed by high walls, and sub-divided into several courts or yards for the accommodation of animals. In sickness they were attended with the greatest care, and here found a peaceful assylum for the infirmities of old age.

"When an animal broke a limb, or was otherwise disabled, his owner brought him to the Hospital, when he was received without regard to the caste or nation of his master. In 1772 this hospital contained horse, mules, oxen, sheep, goats, monkeys, poultry, pigeons, and variety of birds, and also an aged tortoise, which was known to have been there seventy-five years. The most extraordinary ward was that appropriated for rats, mice, bugs, and other noxious vermins for whom suitable food was provided."⁵

¹ Mahāwanīśo, p. 249. ² *Ibid*, p. 245.

³ *Ibid*, p. 256.

⁴ Cunningham's Bhilsa Topes, p. 54, foot note

Hamilton's Description of Hindustan (1801) Vol. I, p. 718 quarto ed Crooke, *Things Indian, Art Pinjrapole M* y 1906).

We quote here from Hemādri the opinions of the sages and the Purāṇas as to the merit of the founder of a hospital¹.—

Visvāmitra.

There is no gift more precious than the gift of cure; therefore it should be given freely to the sick to augment one's good fortune. He who gives medicines, diet, food, oil for smearing and shelter to the sick, becomes free from all diseases.

Samvartta.

The giver of medicines, oleaginous remedies and food for the cure of the sick, becomes free from all diseases, happy and long-lived.

Agastya.

Those who give rice and medicines freely attain happiness, being free from disease.

Saura Purāṇa.

He, who gives medicines to the sick to cure their diseases always remains healthy, long-lived and happy.

¹ अथ आरोग्यदानं ।

तच्चारोग्यदानात्मा दुर्घाते ।

आह विश्वामित्रः ।

आरोग्यदानात्परमं न दानं विद्यते क्वचित् ।

अतीदैरु रुजार्त्तानामारोग्यं भाग्यवहये ॥

अौषधं पथ्यमाहारं तैलाभ्यङ्गप्रतिशयं ।

यः प्रवच्छति रोगिभ्यः सभवेद्ग्राविवर्जित ॥

संवत्सः ।

अौषधं स्वेद्ग्राहारं रोगिभ्यः रोगान्तर्देव ।

इहात्मा रोगरहितं सुखी दीर्घायुरीय च ॥

Nandi Purāna

The high-souled man who gives the Brahmins collyrium in charity to cure the diseases of the eye, goes to the Sun (after death) and becomes free from eye deseases, fine-looking and fortunate.

Good health is a step to the acquirement of religious merit, wealth, pleasure and final emancipation, and so the man who bestows cure to the sick and also he who erects a hospital equipped with good medicaments, dresses, learned doctors, servants and rooms for students, always gain them. The doctor should be well-versed in the religious treatises, experienced, familiar with the actions of medicines, a discriminator of the colour of the roots of the herbals and well-acquainted with the

अगस्त्यः ।

अग्नौषधप्रदातारः सुखं याति निरामया ।

सौर पुराणे ।

रीमिष्ठी रीमग्रान्वर्धमौषवः यः प्रयच्छति ।

रोगहीनः स दीर्घायुः सुखो भवति सर्वदा ॥

नन्दि पुराणे ।

अग्नं ये नरोदयादद्वीर्याधिनिहत्ये ।

विश्वाय स पुमान् याति सूर्येतीकं भद्रामतिः ।

आरोग्यनदयनी दिव्यः सुभगी जायते नरः ॥

तस्मिन्नेव पुराणे ।

घर्मार्थं काम-मीदायाणो आरोग्यं साधनैर्युतः ।

अतस्त्वारीग्यदनेन नरी भवति सर्वदा ॥

आरोग्यनदयनी सुखते

proper season of raising them from the ground, well-trained with the qualities of the juices, (their strength and actions), शालि rice, meat and medicaments, trained in compounding medicines, one who knows well of the physique of men by intelligence, one who knows the temperament and the qualities of the diet, a pathologist who is not idle, well acquainted with the remedial agents for the premonitory signs and sequelæ of diseases, proficient in the requirements of time and place, well-read in the medical text-books—the Ayurveda with its eight divisions and an expert in curing diseases by domestic remedies (prepared from handful of common ingredients).

The pious man who erects such a hospital in which the services of good physicians of this nature are retained, becomes celebrated as the virtuous, the successful and the intelligent

वैद्यस्तु शास्त्रवित् प्राची दृष्टैषधपराक्रमः ।

चौषधीमूलवर्णज्ञः समुद्ररथकालवित् ॥

रसवैर्धविपाकज्ञः शालिसांसौषधीगणे ।

योगविहेहिनां देहं यो धिया प्रविश्येहुधः ॥

घातुपथ्यमयज्ञाश निदानविदतन्दित ।

व्याघ्रीनां पूर्वलिङ्गशस्त्रदुषरविधानवित् ॥

देशकालविधानशक्तिकित्साशास्त्रविज्ञाया ।

अस्ताङ्गायुर्वेदविज्ञा मुष्टियोगविधानवित् ॥

अष्टावङ्गानि आयुर्वेदस्य ।

यथाशत्यं शालाक्यं कायचिकित्सा भूतविद्या कौमारश्यमगदतन्त्र रसायनतन्त्र वाजी-
करणतन्त्रमिति सुश्रुतोक्तानि ।

एवं विधः शुभी वैद्यी भवेद्यत्त्वाभियोजितः ।

आरीस्यशालामवल्तु कुर्व्यादीर्घर्वसंश्रयः ॥

स पुमान् धार्मिको धोक्षे स त्रायार्थं सुखुद्विमान्

man in this world. If in such a hospital the kind-hearted man can cure a single patient of his maladies by simple medicines, oleaginous remedies and compounds of medicinal decoctions, goes to the Brahma's residence with his seven generations upwards. The rich and the poor acquire religious merit in proportion to the amount of riches they possess ; where would the poor man get a hospital and a young physician to cure his diseases ? The man secures the eternal regions mentioned before by rendering the sick healthy by the use of roots to some and by good rubbing (with external applications) to others. He who cures the sick suffering from an increase or decrease of the Air, the Bile and the Phlegm by simple remedies, he too goes to such blessed regions (after death) as are secured by those who perform many religious sacrifices (Yajñas).

व्याधिने विरुद्धी कृत्य आप्येकं करुणायुक्तः ।
 प्रथाति द्रव्यासदने कुलसप्तकसंयुतः ॥
 आश्ची विचारुसारेण दरिद्रः फलभाग् भवेत् ।
 दरिद्रस्य कुतः शाला आरोग्याय भिषग्युवा ॥
 अपिमूलैन कैनापि मर्दनादैरथापि वा ।
 स्वस्थीकृते भवेत्यर्त्ते पूर्वोक्ते लोकमच्यये ॥
 वात-पित्त-कफाद्यानां चया-पचयसेदिनां ।
 यस्तु स्वसाम्युपायेन भीचयेत् व्याधिपौडितान् ॥
 सीपि वाति शुभान् लोकान् अवाप्यान् वज्रयाजिभिः ।

स्कन्दपुराणे ।

आरोग्य शालां यः कुर्यात् भज्ञावैद्यपुरस्कृतां ।
 सर्वोपकरणोपेतां तस्य मुखफलं शर्षे ॥
 वर्षा-र्थ-काम-भीदाशाभारोग्यं साधनं यतः ।
 तथादरोग्य दानेन तद्दत्तं स्याच्चतुर्थं ॥
 अयैकमात्रं विद्वांसं स्वस्थीकृत्य प्रथवतः ।
 ग्राप्रोति सुभ्रहतम्पुरुषमननं चदवर्जितं ॥
 ग्रावदीवरतं द्वार्थं दीवार्थं द्विवीक्षिनं
 वा स्वस्य कुरुते सीपि सर्वदानपत्वं कमन् ॥

Skandapurāna.

Hear, the amount of religious merit secured by a man who erects a hospital containing all the necessary articles (of treatment) and in which are engaged eminent physicians by reward. As good health is the means of attaining religious merit, wealth, pleasure and final emancipation, therefore, he by rendering the sick healthy, gives these four blessings.

By carefully curing a learned man of his sickness great merit is secured, which is eternal and indestructible. He too who cures a sickman who is calm and absorbed in meditation of Siva and knowledge, attains the virtue of all kinds of gifts. Bramhā, Viśnu, all the gods, diseases, relatives and kings—they are obstacles to yoga but not to those who perform it (yogi). Whatever merit is obtained by the great, by supporting the sick Brāhmans (priests), Kshatriyas (warriors), and Bīth (cultivators) and Sudras (servants), can not be obtained by the performance of all the great Yajñas (religious ceremonies). As even the gods can not reach the end of the

ब्रह्मा विष्णुः सुराः सर्वे व्याधयः स्वजना दृपाः ।
 योगस्यैते भव्याविभा व्याधयसे न योगिनां * ॥
 ब्रह्म-चत्विंश्चित्-शुद्धान् रीगार्त्तान् परिपाल्य च ।
 यत्पुरुषं महदाप्रीति न तत्त्वं भव्यामसखैः ॥
 आकाशस्य यदा नातः सुरैरप्युपलभते ।
 तददारीयदानस्य नात्तीवै विद्यते चत्वित् ॥
 पुरुषेनानेन महता गता शिवपुरं नरः ।
 मोदते विविधैर्भौगैर्विभानैः सर्वकामिकैः ।
 एकविश्वत्कुलीपेतः सभृत्यः परिपालितः ।
 आस्ति शिवपुरे तावद्यावदाहतसंप्रवृत्ते ॥
 ततः स्वधर्मशेषिण संप्राप्तः प्रयतः सदा ।
 ज्ञानमुन्पद्यते तस्य रुद्रेष्व परिचारक ॥

firmament, so there is no end (to the merit) of the gift of cure. By this great merit, the man reaching the region of Siva enjoys himself by soaring in a balloon which can go to the various desired directions. With his twenty-one generations upwards and surrounded by his servants, he stays in the Siva's realm so long till deluge does not occur. There, after the lapse of his merit, the devoted servant acquires knowledge from Siva.

Abandoning this world by knowledge, abiding by the prayers to Siva, and casting away this body as a straw, he reaches beyond the limits of sorrow. Being freed from all sorrows, becoming pure, all-knowing and self-sufficient, and absorbed in his ownself, they are called the Liberated. Therefore to mitigate the diseases, the sick should be well nursed; the great sages should especially be attended to even by the sacrifice of one's body or riches. The wise must not irritate the weak patients, and they like the preceptors should be rescued constantly from sins. He who relieves the sick, by taking them under his care, reaches the other bank of this ocean of world.

श्रान्तिरक्तं संसाराच्छिव्यानमुपाधितं ।
 सदैहं दृष्टवत्प्रक्षापं सर्वदुःखानमप्युदान् ॥
 समसदुःखनमुक्तं शुद्धः स्वात्मव्यवस्थितः ।
 सर्वज्ञः परिपूर्णश्च मुक्त इत्यभिवैयते ॥
 तत्त्वाद्वैगापवर्णार्थं शीर्गतं सुपाचरेत् ।
 विश्वेषणं तु शीर्गतं शरीरेण धनेन च ॥
 शीर्गिषी नीडित् श्रावी दुर्व्वक्षानपि सर्वदा ।
 दानं पापाङ्गुरुविनिमयवर्त्यः प्रवर्त्तते ॥
 यीत्यहीतमाक्षान मन्त्रमानी दिने दिने ।
 उपसर्वेत शीर्गतसीर्वस्तेन मन्त्राणां ॥

इत्यारोग्यदानं ।

After these proofs, the statement of Mr. Ameer Ali that "the Arabs invented chemical pharmacy, and were the founders of those institutions which are now called dispensaries"¹ can not be accepted as correct.

DISPENSARIES.

As regards dispensaries, Suśruta advises the physician to construct his dispensary in a clean locality. and the building should face towards some auspicious direction as the east or the north. He says — "The medicines should be kept in burnt earthen pots arranged on planks supported by stakes or pins".² This is still the method of storing medicines used by the *Kavrājas*. Dailvāna explains the passage thus— "The medicines should be kept in pieces of cloth, earthen pots, wooden pots and Śanku (kilaka)".³ The former explanation is plausible for it is impossible to imagine how a kilaka or stake can be a container of medicine, unless it is implied as a point of support for hanging the medicine vials from it.

Dr. Heyne (1814) thus describes the ancient dispensaries of the Hindus "The place in which medicines are kept should

¹ History of the Saracens p. 262, 1899.

² श्रीतमृगारुदफलकाशङ्कुविन्यक्तमेषज्ज
प्रशस्ताद्या दिशि शुचौ भेषजागारमिष्यते ॥

Suśruta Saṃhitā I. xxxvi.

³ गृहीतौषधसंस्थापनोपायं दर्शयन्नाह;—हीतेति । भूतः कर्पटखण्डं, चूदा भारणं, कृतभारणं । फलकं पटकं इति पुस्तकान्वरे पाठः, शङ्कुः कौलकं, एतेषु श्रीतातिष्ठु विन्यक्तं छृतं भेषजं यच्चिन् गृहे तत् भेषजागारं भेषजगृहिष्यते इति सञ्चयं । प्रशस्ताद्या दिशि पूर्वस्यामुत्तरस्यां वा, शुचौ देशे अस्तिन् भूमिप्रविभागीयाभ्याम्, निवन्धेषु व्यत्ययेन व पाठी दृश्यते । अस्ताभिस्तु उड्डक्तमरीबैव पाठो लिखित इति सर्वावयवसाधेष्विलादि यावद्वयं द्रव्यं पुरात्म्बति पाठ न षट्किं ॥

be clean, dry, and not accessible to rats, white ants or dust. The drugs ought to be put in nets, or large pots, the mouth of which must be tied over with a piece of cloth, and suspended in a room. Fire, smoke and water must be kept at a distance

The house in which medicines are stored, should be neither in too high nor too low a situation, and it should not be far distant from places in which medicines may be collected. Its front should face either the south or the north, with a convenient *viranda* before the door of the same side.

The necessary apparatus for mortars, scales, &c, must be kept in a place in the wall that has been consecrated for that purpose by religious ceremonies”

After describing the different classes, and members composing each class, of medicines, Suśruta continues. “The wise physician should collect and classify these medicines, and with them prepare external applications, infusions, oils, ghee, syrups, &c, as required for derangement of a particular humour. The medicines should be carefully preserved in all seasons, in rooms free from smoke, rain, wind and dust. The medicines should be used singly, or in combinations of several medicines of a class, or of an entire group, or of more than one group, according to the nature of the disease, and the extent of derangement of the humours.”²

² एभिर्वेद्यान् कषायाद्व तेज सर्पीं विपानकान् ।
प्रज्वल्य यथाव्यावे कुर्वीति सतिसान् सिषक् ॥
मूसवर्धनिलक्ष्मेदः सर्वर्चुचनभिदुते ।
याह्यित्वा यद्देव त्वस्येदिविनौषधसयहं ॥
समौद्य दीभेदाद्व गथान् भिन्नान् प्रयीजयेत् ।
प्रथमित्रात् समसान् वा गत्वा अस्तुर्वते ॥

ANÆSTHETICS.

In the medical text books of the Hindus, there is no mention of a general anæsthetic, from which we can infer that it was unknown in those ancient days. There are, however, many indications to show that the earlier surgeons felt the necessity of such an agent to produce insensibility to pain. Both Caraka and Suśruta mention the use of wine to produce the desired effect. Caraka says. "After extraction of a dead fœtus before the full term of pregnancy, wine should be prescribed to her, for that will improve the condition of her uterus, make her happy and alleviate the pain of the operation."¹ Suśruta, however, distinctly lays down that "wine should be used before operation to produce insensibility to pain." He again remarks: "It is desirable that the patient should be fed before being operated on. Those who are addicted to drink and those who cannot bear pain, should be made to drink some strong beverage. The patient, who has been fed, does not faint, and he who is rendered intoxicated, does not feel the pain of the operation."²

The use of certain drugs to produce anæsthetic effects was well known to the ancient Greeks and Romans. Dioscorides

¹ व्यपगलग्भश्चल्यानु स्त्रियमामगर्भा सुराशौधनरिष्टमधुमदिरासवानामन्यतममये सामधेतः पाथयेत गर्भकीष्टविशुद्धपूर्वमर्त्तिविक्षरणार्थं प्रहृष्टकार्यं ॥

Caraka Samhitā, IV, viii.

² प्राक्शस्त्रकर्मणेष्ट भीजयेदतुर भिषक् ।
नदाप पाययेन्मद्यं कीर्त्त्य योऽवैदनासङ्गः ॥
न मूर्क्ष्यव्रसंयोगामतः शस्त्रं न बुध्यते ।
तस्मादवश्यं भीजत्व्यं रीमेषूतेषु कर्मनि ॥
प्राणी ह्याभ्यन्तरी नृणां वाह्यप्राणगुस्तान्वितः ।
— — — प्ररीरं पाशमौखिकं ॥

mentions Mandragora (*Mandragora Atropa*) to have been employed internally as a hypnotic and anaesthetic. Pliny (32-79 A.D.) in his *Natural History* mentions that this anaesthetic was also used by inhalation, and this fact is corroborated by Galen, Aræteus, Celsus and others. The Arabian physicians also used it. The Chinese surgeons still use some powder (Indian hemp probably) to throw their patients into profound sleep. In the 13th century Theodoric (died 1298) described the "spongio somnifera," the vapours raised from which were capable, when inhaled, of setting patients into an anaesthetic sleep, thus inducing insensibility to the agony and torture of a surgeon's knife. Baptista also mentions his "Pomum somniferum" to be made with mandragora, opium, &c. The Hindus also inhaled the fumes of burning Indian hemp as an anaesthetic at a period of great antiquity. As early as 927, A. D., they also knew drugs which they employed for the same purpose, for Pandit Vallala, in his *Bhoja Prabandha*, alludes to a cranial operation performed on the King Bhoja after he was rendered insensible by some drug called Sammohini (producer of unconsciousness). Another drug is also mentioned, Sañjibani (restorer to life), by which he soon regained consciousness after the operation had been finished.¹

¹ तदस्तावपि राजान् भीहच्येन भीहयित्वा श्विरः कपालमादाय तत्करीटिकापुटे ख्यित शफरकुले गृहीत्वा कस्त्रिशिहाजमि नित्यं सन्धानकरण्या कपाले यथावदारचय्य सज्जीवन्ना च तं जीवयित्वा तच्चै तद्व्ययताम् ।

CHAPTER III

MATERIALS OF INSTRUMENTS.

IRON AND STEEL

In the R̄gveda, *ayas*, (Latin *aes*), next to gold, is the metal most often referred to. *Ayas* often stands as a generic name to mean simply "metal," though in later works it signifies iron as a rule. The mention of dark and red *ayas* in the Atharva-veda indicates a distinction between iron and copper or bronze. The surgical instruments of the Hindus are recommended generally to be made of iron, but Suśruta allows other suitable material when iron of good quality is not available.¹ He says: "A wise surgeon should get the instruments made of pure iron and with sharp edges by an expert blacksmith who is skilful and experienced in his craft."² The use of impure iron as a material for surgical instruments, he deprecates as a defect and advises the surgeons not to rely on such instruments.

The Hindus were acquainted with steel and they knew how to turn out steel of fine quality from a pure iron ore. Nāgarjuna, the well known Buddhist chemist, wrote a scientific

¹ वानि प्रायश्ची लौहानि भवन्ति वत्प्रतिरूपकाणि वा तदलाभे ।

Suśruta Samhītā. I viii

² शस्त्राश्चेतानि भविमान् शुद्धश्चेत्यायसानि तु ।
कारयेत् ऋचैः प्राप्तं वर्ष्मारं वर्ष्मानोविदं ॥

Ibid. I viii

treatise on steel and iron.¹ Śibodāsa in his commentary on Chakrapāṇi quotes Patañjali as an authority on the subject.² In the Dhanurveda, Viracintāmaṇi, Śāraṅgadharapaddhati and Lehārnava, steel as a material of sword has been described and classified.

Dr. Mitra quotes some references³ about the knowledge of iron possessed by the ancient Hindus from the Rgveda. He finds that "swords (II. 156), spears (IV. 25), javelins (II. 292), lances (I. 774), (IV. II. 288) and hatchets (I. 120) are frequently mentioned; and these weapons were bright as "gold" or golden (IV. 19), "shining bright" (I. 175), "blazing" (IV. 93), "sharp" (IV. 113) and "made of iron" (I. 226); they are "whetted on a grind stone (II. 36) to improve their keenness (I. 150), and "polished to enhance their brightness" (II. 326).... "According to Nearchus, King Porus gave 30 lbs of steel to Alexander as the most precious present he could offer."

Royle also remarks⁴ - "Working in metals they have long been famous for: their steel acquired so great celebrity at an

¹ नागार्जुनी मुनीन्द्र शशास यज्ञोऽशास्त्रतिग्रहनम् ।
तस्यार्थस्य चृतये वयमेतदिश्वाचरैर्बूमः ॥

Cakradatta, Rasāyanādhikāra.

² अर्चियता विधानेन हिरन्यं युरमास्करौ ।
लोकपालान् यज्ञाशैव चेवपालानां प्रधम् ।
आदिवदेवतासेषा धन्वन्तरी-पतञ्जली
दद्याद्विच्च सर्वेभ्यो नानाभ्योपचारतः ॥

Quoted in Śibodāsa's commentary on Louhamārana-Vidhi in Cakradatta.

³ Dr. R. L. Mitra's Indo-Aryans, Vol. I P 301. See Wilson's Rgveda.

⁴ Roy on Antiquity of Hindoo Medicine, Pp. 46-7

early period, as to have passed into a proverb among the Persians, where *foularlee hind* indicates steel of the best quality: and *juwabee hind*, an Indian answer, means a cut with a sword made of Indian steel.'

COPPER

Pure copper was also used as a material of instruments, and vessels and instruments of copper are frequently mentioned in the medical books of the Hindus. A copper probe for applying antimony to the eye has been found in the excavations of Bijnor and another in the Bihat excavations. Cakradatta¹ advises us to use a copper probe for the application of *lekhana* collyrium, and Suśruta mentions a copper needle in the operation for re-clination of cataract²

TIN

Tin was also used as a material of blunt instruments. Suśruta mentions plates of tin to surround a tumour and to protect the healthy parts, before the application of actual cautery.³ Such plates are recommended to be made of tin, or lead, or copper, or iron.

LEAD.

Tubes of lead were used for purpose of fumigation. Probes made of lead were used for application of collyrium. The use

¹ प्रशस्ता लेखने ताक्षी रोपने काललीहजा ।

Cakradatta, Añjanadlukāra.

² तामायसी शातकौम्भी श्लाका स्यद्वनिन्दिता ।

Suśruta Saṁhitā, VI xvii

³ अल्यावश्चिष्टे ज्ञमिभिः क्लेते च लिखितोऽभिः विद्धीत पशात् ।

यद्यन्मूलं वपुतामसौस पदेः समावेष्य तदायसैर्वा ।

चारादिश्चात्मा सक्लद्विद्धात् प्रानाश्चिंचनं मिष्मप्रभत् ।

of lead plates to surround tumours before application of actual cautery has been noted above.

BELL-METAL

The use of bell-metal—an amalgam of zinc or tin and copper, 25 parts of the former with 75 parts of the latter,—as a material of probes for applying collyrium, is mentioned by Suśruta¹

GOLD AND SILVER

Gold was known to the Hindus from the remote antiquity, and among the metals, it is the one most frequently² mentioned in the R̄gveda. Silver was perhaps unknown during the earlier Vedic age, from its name being not mentioned in the R̄gveda. But no conclusion can safely be drawn from this argument³. We find, however, gold, silver, and other precious

¹ सौवर्णं राजतं शार्ङ्गलाभं वैदूर्यकांसप्रज्ञं

आयसानि च वीज्यानि शलाकाभं यथाक्रमं ॥

Suśruta Samhita, VI. xviii.

² “निक्ष दीव”

R̄gveda. 5 Mandala 19 Sūkta.

“निक्षेन सुवर्णं न अलङ्घता दीवा” ।

Sāyana.

अस्मि न हेत्यावान् ।

Ibid. 4 Mandala. 2 Sūkta.

“सुवर्णं निर्दितं कल्यावान् अस्मः” ।

Sāyana.

“A horse with golden caparisons”—Wilson.

³ “एती रवि” ।

R̄gveda. 5 Mandala 33 Sūkta

एतवर्णा चैतवर्णा रथि धनं ।

Sāyana.

Query if silver money be intended”